DOCUMENT RESUME

ED 108 778 RC 008 583

AUTHOR	Bender, Filmore E., Ed.; Cunnings, Lucy M., Ed.
TITLE	Evaluating Impacts of Economic Growth Proposals: An Analytical Framework for Use with Community Decision-Makers. Publication 8.
INSTITUTION	Northeast Regional Center for Rural Development, Ithaca, N.Y.
SPONS AGENCY	Rural Development Service (DOA), Washington, D.C.
PUB DATE	Apr 75
NOTE	176p.; Based on papers prepared for Workshop on Controlled and Balanced Growth: Evaluating Community Impacts of Economic Growth Proposals (Durham, New Hampshire, June 1974)
AVAILABLE FROM	Northeast Regional Center for Rural Development, 242 Roberts Hall, Cornell University, Ithaca, New York 14853 ($2.00)
EDRS PRICE	MF-$0.76 HC-$9.51 PLUS POSTAGE
DESCRIPTORS	Case Studies; Change Strategies; Community Control; *Community Development; Conceptual Schemes; *Decision Making; *Economic Development; Economic Progress; Environmental Influences; *Evaluation Criteria; Information Needs; Measurement Techniques; Project Applications; *Rural Development; Social Factors
IDENTIFIERS	*Northeastern States

ABSTRACT

The nine in this publication are based on the assumption that communities must develop a framework for analyzing economic growth if they are to make responsible decisions relative to rate and form of economic growth. Divided into two parts, this document presents: (1) papers relative to general perspectives on economic growth and development, and (2) papers relative to specific case studies on economic growth. Among the perspectives presented on growth and measurement are: (1) an economist's view of opportunities and problems, (2) environmental implications, (3) sociological implications, (4) the fiscal impact of economic development on a community, (5) tools for making economic growth decisions, and (6) information problems relative to assessment. The papers which present case studies deal with: (1) the impact of seasonal home development, (2) the impact of a construction worker community on a rural county, and (3) the impact of residential development alternatives. The workshop program and the names and addresses of program participants are appended. (JC)

ED108778

Northeast Regional Center for Rural Development Publication 8

April 1975

RECEIVED
JUL 17 1975

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Evaluating Impacts of Economic Growth Proposals:

An Analytical Framework for Use With Community Decision-Makers

Northeast Regional Center for Rural Development
Cornell University, Ithaca, New York

Connecticut *Delaware* Maine *Maryland* Massachusetts *New Hampshire*
New Jersey New York *Pennsylvania* Rhode Island *Vermont* West Virginia

RC 008583

0002

A publication of the
Northeast Regional Center for Rural Development
242 Roberts Hall
Cornell University
Ithaca, New York 14853

Two dollars per copy

Permission to reproduce material appearing in this publication is hereby granted for non-copyrighted use, provided full acknowledgement is made of the source and that no change of headings or text is made without approval.

0003

ED108778

EVALUATING IMPACTS OF ECONOMIC GROWTH PROPOSALS: AN ANALYTICAL FRAMEWORK FOR USE WITH COMMUNITY DECISION-MAKERS

Based upon papers prepared for
Workshop on Controlled and Balanced Growth:
Evaluating Community Impacts of Economic Growth Proposals

June 16-19, 1974
New England Center for Continuing Education
University of New Hampshire
Durham, New Hampshire

Sponsored by the
Northeast Regional Center for Rural Development

CONTENTS

Foreword
Olaf F. Larson, Northeast Regional Center for Rural Development . v

Introduction
Filmore E. Bender, University of Maryland vii

PART I. PERSPECTIVES ON GROWTH AND MEASUREMENT

The Economist's View of Economic Development: Opportunities and Problems
William J. Bellows 7

Environmental Implications of Economic Growth
Phillips Foster and Robert E. Menzer 17

Sociological Implications of Economic Development
Ward W. Bauder 35

A Framework for Analyzing the Fiscal Impact of Economic Development on a Community
Frank Goode 47

What Tools are Available for Making Economic Growth Decisions?
J. Dean Jansma 57

Information Problems in Assessing the Impacts of Economic Development
John R. Fernstrom 75

PART II. CASE STUDIES OF GROWTH

The Impact of Seasonal Home Development
Malcolm I. Bevins and Gerald L. Cole 87

The Impact of a Construction Worker Community on a Rural County: A Case Study
J. Paxton Marshall and Burl F. Long 123

The Impact of Residential Development Alternatives: A Case Study Problem
Edmund F. Jansen, Jr. 147

APPENDIXES

A. Workshop Program 175
B. Participants in Workshop 178

0005

FOREWORD

The papers in this publication were prepared for the Workshop on Controlled and Balanced Growth: Evaluating Community Impacts of Economic Growth Proposals sponsored by the Northeast Regional Center for Rural Development. Several of the papers, especially the case studies, have been revised substantially since presented at the Workshop.

This training Workshop was designed primarily for members of the Cooperative Extension staff in the 12 Northeastern states who have responsibilities, on an area or regional basis, for educational work in community resource development-rural development. Attendance was not, however, limited to this group. The general purpose was to provide information which would put Cooperative Extension staff members in a better position to provide educational assistance to community leaders who must make decisions about economic development proposals.

The Center is indebted to the agricultural administration at the University of Maryland, and especially to the Department of Agricultural and Resource Economics, for enabling Professor Filmore E. Bender to take a major leadership role in organizing and conducting the Workshop. He also assembled the papers for this publication and reviewed them editorially.

Professor Bender served as Chairman of the ad hoc Planning Committee for the Workshop. Other members were: Robert L. Christensen, University of Massachusetts; Walter E. Coward, Jr., Cornell University; J. Dean Jansma, Pennsylvania State University; Jerry J. Klement, University of Maryland; and Kenneth E. Wing, University of Maine. Frank M. Goode, Pennsylvania State University, served as alternate for Professor Jansma. Silas B. Weeks, University of New Hampshire, and the current chairman of the Northeast Public Policy Committee, met with the Planning Committee and arranged a tour for Workshop participants to the Portsmouth (New Hampshire) Urban Renewal and Preservation Project.

Local arrangements for the Workshop were handled by the Division of Continuing Education, Conference Department, University of New Hampshire, Durham.

Photographs are by Leslie C. Hyde, member of the Center staff. Lucy M. Cunnings provided editorial assistance in the preparation of the papers for publication. Jocelyn Loh typed the manuscript for this volume.

Figure 3 in the paper by Phillips Foster and Robert E. Menzer is reproduced by permission of the World Population Society; Figure 5 in the same paper is reproduced by permission of the Population Reference Bureau, Inc.

The Workshop on Controlled and Balanced Growth: Evaluating Community Impacts of Economic Growth Proposals was sponsored by the Northeast Regional Center for Rural Development as a part of its program conducted under Section 503 (b) (2), Title V of the Rural Development Act of 1972.

Olaf F. Larson

Director, Northeast Regional
Center for Rural Development

Left blank

INTRODUCTION

There is a continuing need in rural America for growth and development. Many workshops and conferences have been devoted to the task of initiating growth in stagnant or declining areas. This work is needed and will continue into the foreseeable future. However, many rural communities are already experiencing growth. Often, the growth is too rapid for comfort.

In addition, many urban and suburban communities must make decisions concerning the type and rate of growth that will take place. Growth is a complex problem with many facets. Economic, sociological, environmental, and political considerations play a role in the growth of any community.

The purpose of this series of papers and case studies is to aid individuals and communities to achieve better decision-making when dealing with questions of growth. The first section is devoted to papers that focus on the opportunities and problems of growth from different perspectives. The second section is devoted to selected case studies which illustrate the concepts presented in Part I.

Throughout the development of these papers was the underlying assumption that communities will be able to make better decisions about the rate of growth and the form of growth that should take place after they have developed a better framework for analyzing growth. That is, communities must learn to ask developers and themselves the correct questions. The primary purpose of this publication is to aid communities in asking the "right questions at the right time."

This workbook is the result of the combined efforts of many individuals. It grew out of a series of discussions and meetings culminating in a Workshop held at the New England Center for Continuing Education, Durham, New Hampshire, June 16-19, under auspices of the Northeast Regional Center for Rural Development, Cornell University, Ithaca, New York.

Filmore E. Bender
Department of Agricultural and
Resource Economics, University of Maryland;
Chairman, ad hoc Planning Committee
for Workshop on Controlled and Balanced Growth

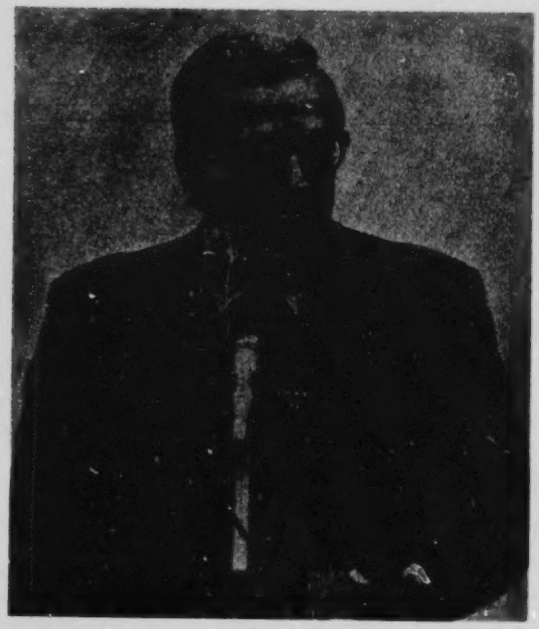
p vi blank

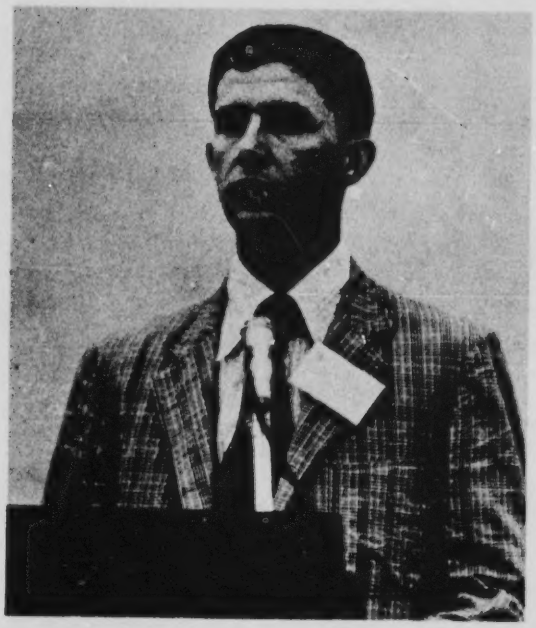
PART I

PERSPECTIVES ON GROWTH

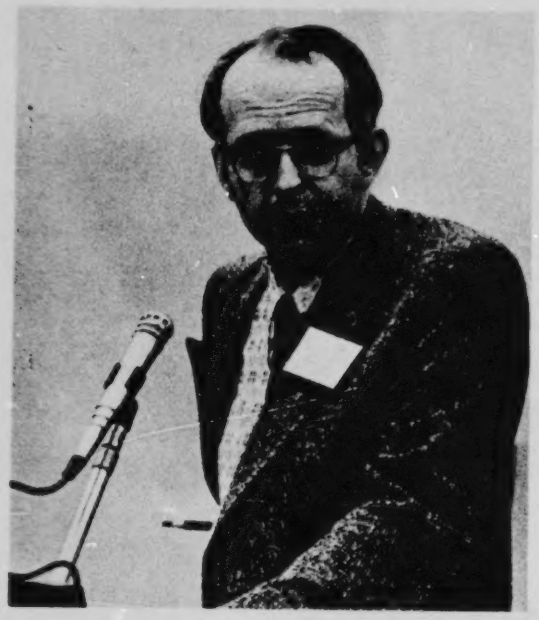
AND

MEASUREMENT

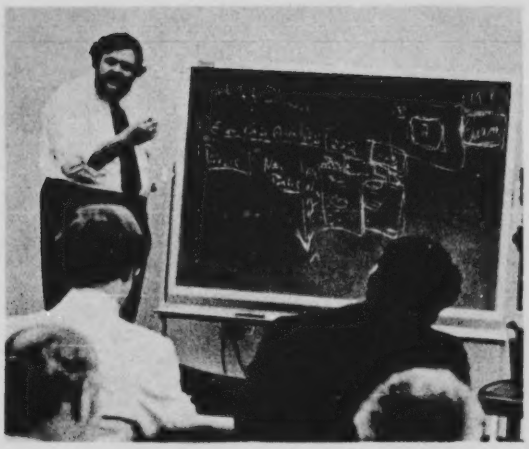




Above, left - Participants from 17 states were welcomed by Maynard C. Heckel, New Hampshire Cooperative Extension Director and member of the NERCRD Advisory Committee (Board of Directors). Above, right - William J. Bellows, University of Maryland, presented an economist's view of economic development. Below, left - Phillips W. Foster, University of Maryland, examined environmental implications of economic growth. Below, right - John R. Fernstrom, Extension Service, USDA, discussed information problems in assessing community impacts of economic development proposals.



p. 2 blank



Above, left - A framework for analyzing the local fiscal impact of economic development was given by Frank M. Goode, Pennsylvania State University. Above, right - J. Dean Jansma, Pennsylvania State University, explained analytical tools available to assist decision-makers evaluate economic growth proposals. Below, left - Ward W. Bauder, Cornell University and Economic Research Service, USDA, discussed sociological implications of economic development. Below, right - Workshop details were reviewed by Olaf F. Larson (left), Director, NERCRD, and Filmore E. Bender, University of Maryland, chairman of the ad hoc committee which planned the Workshop.

p. 4 blank

THE ECONOMIST'S VIEW OF ECONOMIC DEVELOPMENT: OPPORTUNITIES AND PROBLEMS

William J. Bellows

Growth and development are subjects of widespread discussion and frequently strong opinion. The issues are complex, however, and in some cases obscure. One of the reasons for the complexity is that in some respects pressure is being exerted on the resource base. For example, there is great demand for land in metropolitan areas. The widespread use of the elevator in tall buildings has enabled very intensive use of some land to take place. The resulting concentration of people is much greater than could have been achieved without the elevator. When many of us want the same fruits of technology at the same time, we find that the facilities are not adequate to supply our demands; the results are brown-outs, traffic congestion, inadequate parking facilities, crowded parks, etc.

The purpose of this paper is not to give details on the issues, rules-of-thumb for procedures, or answers to problems. Rather, it is more general in nature and consists of two parts. The first is to raise some important issues in this area of development. No answers; just issues. Second, it is to bring out some of the points in terms of economics -- at least as viewed by an economist. The important issues include:

1. Income and the possibility to solve, or alleviate, some of the problems resulting from poverty.

2. The local community's fiscal position as it is influenced by taxes--tax rates, assessments, tax bases, etc. -- and by the cost of services which must be provided.

3. Community size; is there an optimum size? Or, is there a maximum size which is economically efficient?

4. The pressure exerted through real estate taxes to convert land from low intensity uses to higher ones.

5. The growth - no growth controversy, and

6. Some of the different types of development which might be encouraged and their economic implications.

William J. Bellows is Assistant Professor in the Department of Agricultural and Resource Economics, University of Maryland, College Park.

R. G. Blank

To discuss these issues it seems important to look at both the opportunities and the problems; where appropriate, consideration will be given to the trade-offs involved when choices are made. Before jumping into the discussion of the issues with both feet, it might be well to spend a few moments to define a few terms so that there will be no misunderstanding of meaning.

Definitions

Economic development is many things to many people. Although they may be similar in many respects, they can be very different. For example, to the construction industry, development may be simply the construction of buildings -- whether for residential or for business use -- on previously open land. To others, it might be an urban renewal project or the attraction of a new business or industry into an area. To still others, it could be the introduction of new technology such as a new tractor on a farm or a new machine in a factory. It might be the introduction of a new technique.

For purposes of this discussion, it would be useful to make use of a commonly accepted and understood concept or definition of development. Development is an increase in per capita output resulting from change or innovation. For example, the acquisition and use of a new machine or technique that results in greater output from the same amount of labor is development. Similarly, a new firm or industry locating in an area and employing previously unemployed labor is development. It would be development even if the labor were employed initially but were able to be more productive in the new industry.

Development as defined here should not be confused with growth. To distinguish between the two, growth refers simply to the increase of some variable over time. Growth might refer to the increase in the number of students in a school, houses in a community, or gross national production of the United States.

Another concept I would like to clarify is that of the community being considered. The economist usually wants to discuss a community that has some unity in terms of economics. That region may not be the same as the one defined by political boundaries -- whether they be town, city, county, or state. Similarly, a student of natural resources might find an even different set of boundaries which should be drawn -- for example, a watershed. While it is possible that these three criteria for drawing community boundaries might coincide, it is probable that they will not.

For purposes of discussion here, it makes sense to consider the community to be the one in which planning and action can take place. Thus, the discussion will be in terms of the political or decision-making community, however that may be defined. In some cases, it will be simply one jurisdiction -- a town, or a county, or perhaps even a state. In other cases, it may be a combination of jurisdictions to form a regional jurisdiction for one or more purposes. Thus, the terms "area", "local area community", "jurisdiction", and "region" all refer to the same thing -- the community in which the impact of development is being evaluated.

Opportunities Resulting from Development

Higher Incomes

As development results in increases in per capita output, it is reasonable to expect that labor's income will increase. If the problems created by the rapid and widespread inflation in the United States today are ignored, it seems reasonable to assume that the increased incomes resulting from development are real increases. That is, incomes rise by a greater amount than do the prices wage earners must pay. Real increases in income are widely viewed as the key to solving many of society's current problems. Poverty and the associated problems are frequently considered subject to solution through such income supplement programs as welfare payments, Aid to Families with Dependent Children and, recently, the negative income tax, food stamps, and The Family Assistance Plan. All of these programs are aimed at providing money (or its equivalent as in the case with food stamps) to people who are poor. The presumption behind these programs is that with money the poor will be able to better themselves by purchasing better housing, food, medical care, clothing, etc.

Whether or not providing funds to the poor will be sufficient to solve their problems is not the point of this paper. It is probably safe to say, however, that some of their problems cannot be solved without either more money or payments-in-kind such as food stamps and subsidized housing. To the extent that development raises the incomes of poor people, it carries with it the opportunity to solve some of the problems associated with poverty.

Greater Tax Base

As has already been pointed out, one way in which development might take place is for a new firm to move into a community. This type of development is particularly attractive because in addition to the immediate benefits accruing to the employed labor in the form of higher income, the new firm's facilities become part of the tax base used for computing real estate taxes. Inasmuch as real estate taxes are the major source of revenue for most local communities, i.e., cities, towns, and counties, an opportunity to increase the base on which taxes are collected represents an opportunity to increase revenues without increasing the assessments or the tax rate. Should additional revenues not be required, there would be an opportunity to reduce the tax rate. As any owner of real estate knows well, the latter situation is rare indeed. At best, one might hope for a slowing in the rate of increase of the tax rate.

In addition to the tax base created by the new firm, there may be an increase in the amount of residential real estate if the new firm attracts new residents to the community. This additional real estate would have the same effect as the firm's facilities did on the tax base.

Inherent Value in Growth

As has already been discussed, there is a tendency to confuse the use of the words "growth" and "development". By using our terminology, it is not difficult to see that development might result in growth of a community.

Whether growth is measured in terms of population, number of schools, size of the local government's budget, or some other variable, many measures may increase due to development. During the 1960's, much acclaim was attached to simple growth and each new increase in census figures was applauded as if it were the progress report of a fund-raising campaign approaching its goal. There are serious questions as to whether growth itself should be acclaimed so enthusiastically. Today, the attitude is considerably less widespread than it was during the last decade. But if consideration of the merits of growth is postponed for a few moments, we can say that for those who wish to celebrate growth, development provides an opportunity for growth to take place.

Problems Associated with Development

In general, benefits are not realized without incurring costs. Indeed, in some cases the costs may exceed the benefits, thus making the expenditure of funds and/or effort to achieve the returns unattractive. Although no rule can be stated as to the attractiveness of development, it is worthwhile to spend a few moments considering some of the problems that might be associated with development.

Income Distribution

Increases in income can hardly be turned around to become a problem in themselves, particularly from the point of view of the one whose income is increased. However, as was pointed out above, one of the opportunities of the increased incomes associated with development is the possibility to eliminate, or reduce, poverty in the community. The question to be answered is, "Who receives the increases in income?" Does the additional income really go to the poor or does it go to those who already have adequate incomes? If it is the latter, development is not the same kind of opportunity that was described above. In fact, it may aggravate the existing equity problem. That is, if the increases accrue to those with incomes above the poverty level rather than to those below, the spread between the two groups is increased rather than decreased. Thus, income distribution is less equitable rather than more so.

Looking at the income distribution more carefully, several segments of the labor force can be identified and the impact of development on each can be evaluated. First, the question of whether the labor required for development is employed or not should be raised. One of the major reasons for poverty in this country is unemployment. If the opportunity to alleviate the problem of poverty is to be realized, employment possibilities for the unemployed must be created. Should the job openings be for people who are already employed elsewhere but who have sufficient mobility to take the new jobs, the development opportunity may have become a problem for the original employers who are not able to find labor at the prices they can afford or with the skills they require.

A second issue to be examined is the one of skill level requirements of the new firm. Will the new firm provide jobs with skill requirements that can be filled by residents of the area? If not, and if the firm will not conduct training to teach the required skills, the new firm may not provide the opportunity that was originally envisioned.

The final consideration (which is closely related to the one above) to take into account when considering the question of employment opportunities is the one regarding the location of the labor that will be employed. Will the jobs provided be filled by resident or local labor? Or, on the other hand, are the job requirements such that the labor needed to fill them will be non-local? Should the jobs and the available labor be incompatible so that labor is imported, it is important to know whether the workers will move into the area and become residents or whether they live close enough that they can conveniently commute. The importance of this question will be discussed further below.

Obviously, if one of the objectives of development is to alleviate local poverty and the indigenous poor are not qualified for the jobs or there are not enough jobs, then with respect to income distribution, development did not achieve its objective.

Cost of Services Demanded

As was mentioned above, it is important to know the residence of workers employed as a result of development. This is important because of the different character of services demanded by residents and by commuters. The cost of services demanded is the often ignored counterpart to the frequently considered revenue collection potential resulting from an expanded tax base. The commuter contributes nothing directly to the tax base but makes relatively few demands for services. Some roads are required to get him to and from work and some utilities must be provided to his place of employment, but the most costly single service--education--is not required by the commuter.

Because of the high cost of providing services for residents of an area, a careful comparison should be made of the costs incurred and revenues collected before major development is encouraged. In general, it seems that the single family home generates a relatively small volume of tax receipts when compared with the educational facilities and sewer and water services that must be provided to it.

The comparison of service costs and tax receipts associated with the commercial and/or industrial sector might yield a different relative weighting of the costs and revenues. Perhaps the major reason for this is that the costly educational facilities required by residents are not required by commercial establishments - at least they are not required directly.

Economies or Diseconomies of Scale

Growth and development are by no means synonomous but one may lead to the other. If successful development has taken place in a community, it is entirely possible that growth may follow. The higher incomes are attractive and people move into the area. Such migration is desirable (assuming there are employment opportunities) as long as there are economies of scale to be realized. For small communities, increasing the number of people served may very well be effected with a less than proportional increase in cost. The result is that the per capita cost of providing the service goes down as the number of people served increases. On the other hand, large communities may experience the reverse; as the number served increases, there is a greater than proportional increase in cost; so, per capita cost rises as the number

served increases.

Land Conversion

The use to which land is put is constantly changing. The change in most communities is from low intensity uses to higher ones. Land goes from agricultural, forest, or idle use to some more intensive use such as single family homes, apartments, business, or industrial. The rate at which land is converted from the low intensity uses to higher ones is fairly slow, but there are factors which can tend to accelerate the conversion.

Should development occur in such a way that diseconomies of scale are realized or that an increase in the high service-demanding residents rather than the low service-demanding ones is encouraged, funds must be collected to pay for the services provided to the community. The increased receipts are usually collected by increasing the real estate tax rate and/or by increasing the assessed valuation of real estate. Many political jurisdictions require that assessments be based on market values which frequently are much greater than the value derived from a low intensity use such as agriculture. The tax bills increase as market values increase, thus making the holding of land for low intensity uses less attractive than might otherwise be the case.

Growth Versus No Growth

In the past few years, it has become popular to debate the issue of the possibility and desirability of continued growth. Several books have been published which deal specifically with the issue of growth [2, 5]. No attempt will be made here to review the battle lines being formed in this popular controversy, but some of the issues are important in any consideration of controlled and balanced growth and development.

It seems that an important consideration is whether or not growth itself is to be the issue for debate. To look at different problems associated with growth, thereby discussing the elements of it, might be more reasonable. From a world-wide standpoint, much of the argument is based on the question of the adequacy of the world's resources and the capability of the environment to assimilate waste products that are required if growth is to continue. Unfortunately, much of this argument seems to be about whether there is sufficient information on which to make reasonable judgements.

Another element in the controversy is the role of technology. Some argue that technology is a major contribution to the negative aspects associated with growth, and that attempts should be made to slow the rate of technological innovation. On the other hand, there is a school of thought that believes that the only hope for solving some of the resource and environmental problems that accompany growth is the introduction of more technology.

While the great debate over the world-wide problem of continued growth is an interesting one, it really should be left for another paper. The issue to be decided on the local level is whether growth itself is to be curtailed or stopped entirely, or whether future growth will merely be slowed to something less than the pell mell race to build roads, residential subdivisions, and industrial parks on what sometimes appears to be as much land

as possible. Will growth be allowed to take place as a result of decisions made in the private sector on the basis of profits or will it be controlled and guided by decisions made in the public sector?

There are strong arguments on both sides. The free market allocation of resources has been favored throughout much of the history of this country, and there is much to be said for it. The price of a good is an effective regulator of how much of the good will be consumed. As the price rises, the quantity demanded decreases while the quantity supplied increases. If the price falls, the reverse is true. In this manner, the proper quantity is brought to market.

Good and effective as it is, however, the market is not perfect. Imperfections in the market place are becoming well known. One of the more common ones is that of effects resulting from a market place transaction which is experienced by people who were not parties to the transaction. The economist calls these effects "externalities" and a good example of them is the problem of pollution. If in the process of producing some good for public purchase and consumption, there are by-products which must be disposed of, a cost will be incurred in the disposal process. If the producer treats the by-products, he pays the cost. In many cases, however, the producer is able to dump the by-products into the air or into a waterway at no cost to himself, thus passing the cost on to someone else who must stop swimming in the river because of dirty water or who must wash his shirts more often because of the dirty air.

Because the free enterprise market place does not take account of all resource allocation problems, there is some pressure for the public sector to assume responsibility for the allocation of some resources. The argument for public decisions is based in part on the assumption that the public sector might be better able to handle the externalities that exist in private markets and to take into account a longer time period than would a private firm.

It is these pressures which are beginning to manifest themselves in many communities where there are efforts to reassess the established policies and priorities. For example, during the past decade there has been a migration of large numbers of people from the city to the suburbs. The move was due in part to the externalities of residing in the city and in the suburbs and other rural areas. In the city, people experienced crowded living and working conditions, noise, air pollution, rising crime rates, etc. In the suburbs, they had their own yards with a lawn and perhaps a garden, low noise levels, clean air, and low crime rates. The suburbs offered such pleasant surroundings that many made the decision to move there. It is this private decision made by many people that has begun to bring to the suburbs some of the very things people sought to escape when they left the city. Now, instead of attempting to escape by moving elsewhere, people are beginning to think of keeping their communities the way they are rather than continuing to let them grow. People are calling for a reappraisal of priorities.

Although reappraisal of priorities seems to be a worthy undertaking, it is a loaded issue. The reason it is a touchy issue is that there are costs involved and the costs are not shared equally. For example, if a more or

less rural community is to remain so, it might decide to drastically slow or stop new construction. Such a policy may benefit present residents, but it would hurt potential residents because it means that they may not be able to live there due to either unavailable or expensive housing. The construction industry would be hard hit as well; jobs would be lost and incomes reduced. The result would be that, in part, jobs and incomes in the construction industry would be traded for the preservation of the community's rural character. It is not surprising, therefore, that the change in priorities might be opposed by the construction industry. This industry is used here only as an example; its use does not mean that it is the only industry or interest group that would be hurt by the new policies. The important thing to remember is that what is merely a change in priorities for one person is a job to someone else.

Another group that will be hurt by any major re-direction of community growth are the large land owners. Many of them may have anticipated selling their land for development at some time in the future. The trade-offs in this case are not jobs but rather profits that might have been made from the sale of the land.

Although the economist may prefer to assign values to all gains and losses, it may not be possible to do so. For example, while it is easy to determine the loss associated with a lost job, it is difficult to determine the gain in the form of a less congested community or of a field or wooded area that is kept undeveloped.

Type of Development and Interdependence

When a community considers the objective of developing by means of attracting industry, it should consider what type industry it would most like to have. Obviously, each community is going to want the industries that are clean, quiet, and pay high wages. But not all communities have the characteristics which attract such industries [4, p. 29]. A community should assess its advantages and try to attract the industries that can make good use of them.

To the extent that choices are possible, however, consideration should be given to the type of economy that will result from attracting certain kinds of firms or industries. Will the economy be a diversified one with a number of different kinds of firms having little if any economic ties to each other? In this case, the economic activity of these firms would be that of importing raw materials from sellers and selling the finished product to buyers outside the community. This type of economy could characterize a community whose industry is of the same type and in the same manufacturing stage as, for example, if all of the manufacturers were textile mills as in the case of some New England communities 75 years ago. In the latter case, the firms were engaged in non-local business except for the labor, land, and utilities used.

On the other hand, a community might prefer to attract industries that are related to existing industries, either as suppliers of raw materials or as buyers of finished products. The economic interrelationships would mean that the entire economy would have the opportunity to prosper (or suffer) together.

Summary

It is a challenging prospect to consider, discuss, and decide the future courses a community can and will follow. The issues are important, complex, and in some cases clouded, but they are nonetheless real issues. As we have seen, when decisions are made, there will be some who gain and some who lose. Before this happens, care should be taken to appraise carefully the opportunities and problems associated with development. The gainers and losers should also be identified even though many times the gains and losses cannot be quantified.

References and Selected Bibliography

1. Boulding, Kenneth E., Elvis J. Stahr, Solomon Fabricant, and Martin R. Gainsbrugh. Economics of Pollution. New York: New York University Press, 1971.

2. Meadows, Donella H., Dennis L. Meadows, Jorgen Randers, and William W. Behrens III. The Limits to Growth. New York: Universe Books, 1972.

3. Mumford, Lewis. The Myth of the Machine: The Pentagon of Power. New York: Harcourt Brace Jovanovich, Inc., 1970.

4. Perloff, Harvey S. How a Region Grows, Supplementary Paper No. 17. New York: Committee for Economic Development, 1963.

5. Weintraub, Andrew, Eli Schwartz, and J. Richard Aronson, eds. The Economic Growth Controversy. White Plains, New York: International Arts and Sciences Press, Inc., 1973. See especially E. J. Mishan, "Growth and Antigrowth: What are the Issues?", pp. 3-38.

ENVIRONMENTAL IMPLICATIONS OF ECONOMIC GROWTH

Phillips Foster
and
Robert E. Menzer

Three Salient Aspects of Economic Growth

Three salient aspects of economic growth have had outstanding impacts on the environment: increased production, increased population, and increased urbanization. Over the years, these three have interacted and supported each other as our complex modern industrialized society has developed.

Increased production, especially increased agricultural production, has made possible increased population. As the agricultural production revolution made it possible for more and more people to be supported off the farm, larger and larger numbers of people gathered in the cities where they found new employment opportunities. Some of these people worked in the factories that sprung up to provide the developing agriculture with its purchased inputs; thus, a symbiotic relationship developed.

The increase in level of living that went with economic growth was so welcomed, so spectacular, so highly desired, that the inconveniences that went along with it -- the sweat shops, the dangerous working conditions of the common laborer, the dirty rivers of the countryside and the smelly air of the city were all shrugged off as "the price of progress." We still regard environmental deterioration as a "price of progress," but, of course, in today's world we are wondering if perhaps the price isn't getting unreasonably high.

To get a better understanding of the factors generating this "price of progress", let's look separately at these three salient aspects of economic growth.

Increased Production

It's hard to say when the increased production that led to today's eco-crisis began. Economic historian Walter Rostow suggests that the first

---

Phillips Foster is Professor in the Department of Agricultural and Resource Economics, and

Robert E. Menzer is Professor in the Department of Entomology, University of Maryland, College Park.

p. 14 blank

"take-off into sustained growth" occurred in England around the period from 1783 to 1802. He places the American "take-off" at around 1843 to 1860.[1]

We have good production figures for the U.S. economy since 1900. We have increased our productivity at a little over 3 percent annually ever since the turn of the century. Three percent a year may not seem like much, but over the years it adds up, as you can see in Figure 1.

You can get some idea of the jolt that this increase in productivity has given the level of living in those countries experiencing it by looking at a map of each country of the world drawn according to its population and comparing that with a map of each country of the world drawn according to its Gross National Product (Figure 2). Because economic growth has been unevenly experienced, an enormous global imbalance has developed between countries such as China and India - which have experienced only a few of the fruits of economic growth - and countries such as West Germany and the United States which are representative of those parts of the world where the lion's share of the fruits of economic growth have gone.

Increased Population

The population growth resulting, of course, in large measure from this increase in productivity, has been most spectacular in North America. When the Pilgrims landed in 1620 there were perhaps a million Indians in the area we now call the United States. Now there are some 210 million people in the same area -- an increase of over 200 times in less than 400 years. Growth in world population has been less spectacular, but dramatic, just the same (Figure 3).

World population is currently growing at 2 percent per year. Should it continue growing at this rate, it will double in 35 years. (To get the doubling time for anything growing at compound interest, like population, divide the number 70 by the annual rate of growth.)

Increased Urbanization

Increased productivity on the farm has made it possible for increasing proportions of our population to flock to the cities. The efficiencies of the factory system, and the great urban-centered bureaucracies provide a variety of work opportunities not available generally in the countryside. Thus, the United States has changed from an economy which was largely rural and agricultural to one which is largely urban and commercial-industrial (Figure 4).

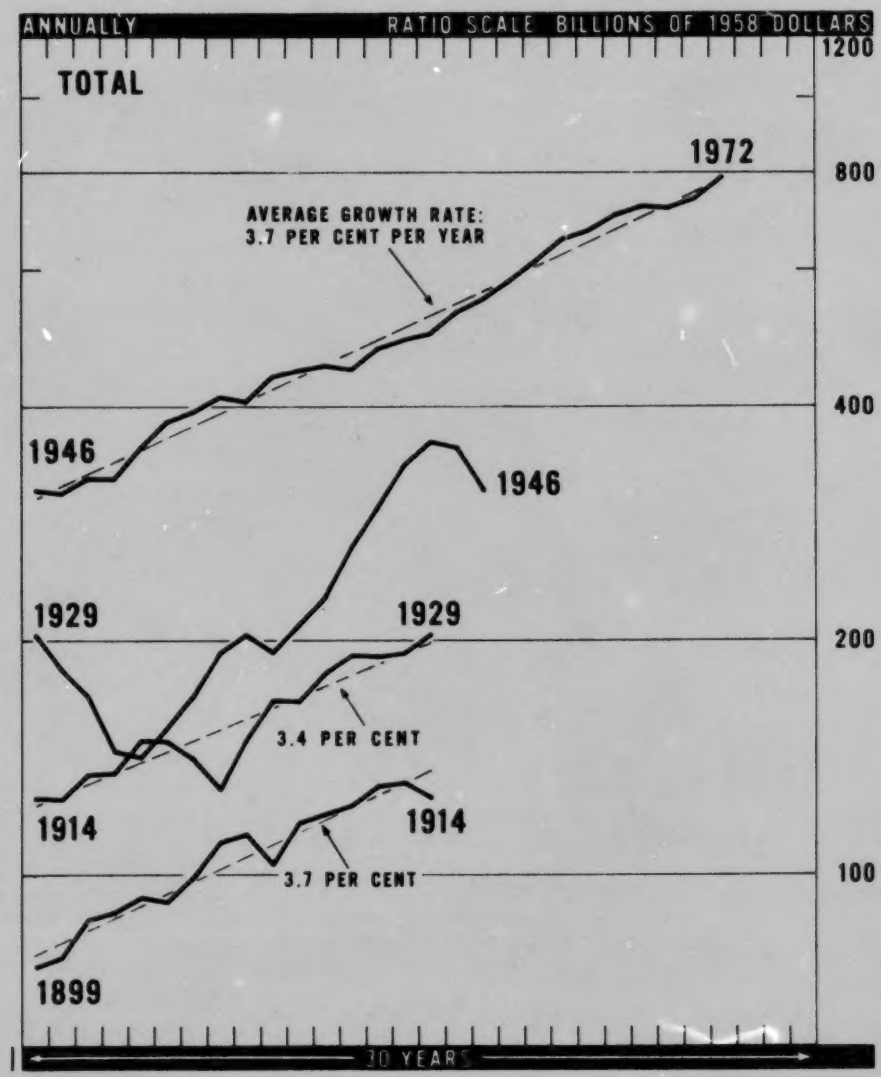
Both population growth and urbanization are proceeding faster in the underdeveloped world than in the developed world. Demographer Nathan Keyfitz points out that between 1920 and 1960, the total population of the developed world merely doubled, while the population of the underdeveloped world increased by 4 times. But during the same time frame, as the urban

---

[1] W. W. Rostow, The Stages of Economic Growth, (London: Cambridge University Press, 1960), p. 38.

Figure 1

GROSS NATIONAL PRODUCT IN CONSTANT DOLLARS



Source: Historical Chart Book, 1974, Board of Governors, Federal Reserve System, p. 68.

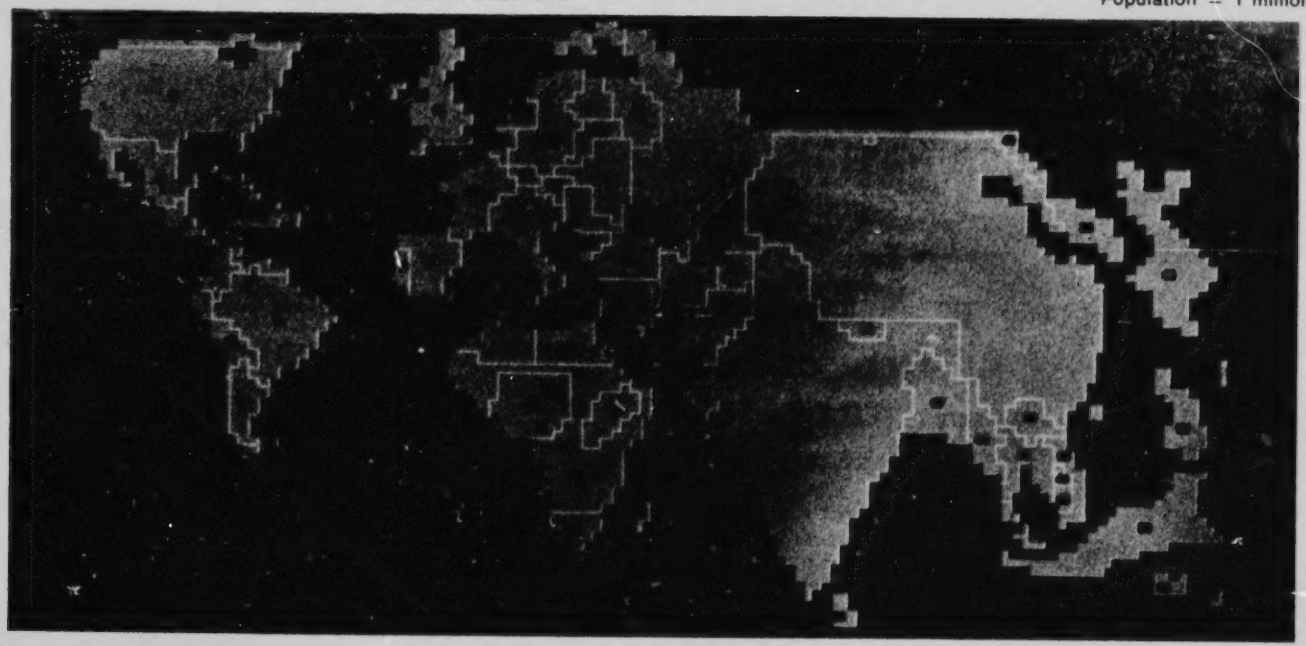
0022

Figure 2

Global Imbalance

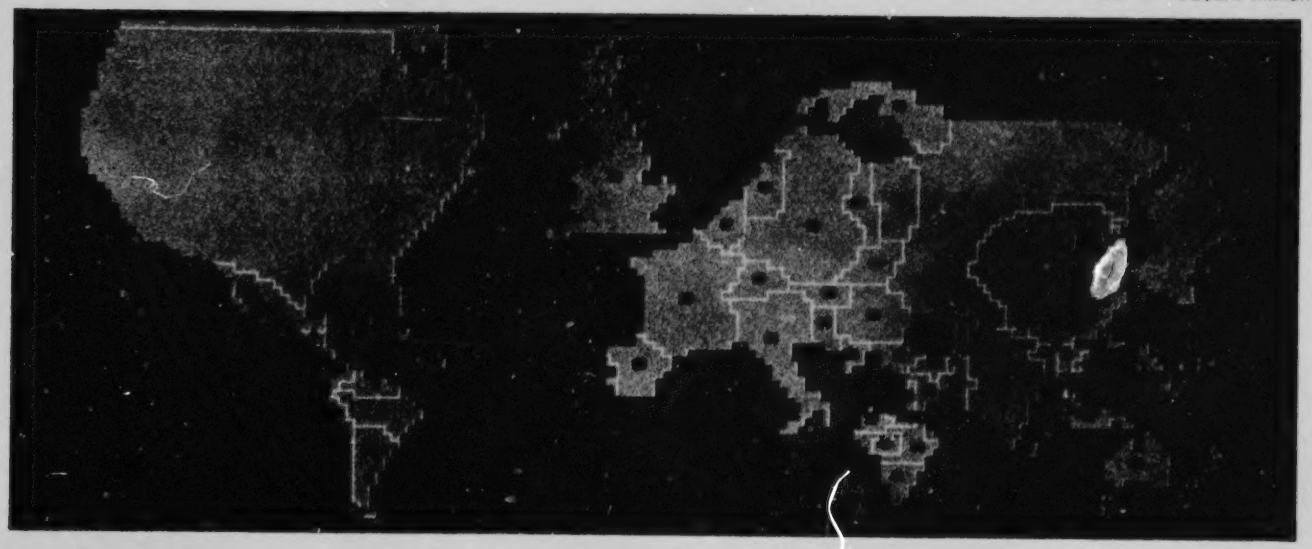
The world in 1980 drawn in terms of millions of inhabitants

Population = 1 million



The world in 1980 drawn in terms of national revenue

GDP = US$375 million



1 Canada
2 United States of America
3 Mexico
4 Cuba
5 Other Caribbean countries
6 Other Central American countries
7 Colombia
8 Venezuela
9 Brazil
10 Other South American countries
11 Argentina
12 Chile
13 United Kingdom
14 Ireland
15 Scandinavia
16 Netherlands
17 Belgium and Luxembourg
18 Federal Republic of Germany
19 Switzerland
20 France
21 Italy
22 Spain
23 Portugal
24 Yugoslavia
25 Greece
26 Austria
27 Poland
28 German Democratic Republic
29 Czechoslovakia
30 Other East European countries
31 U.S.S.R.
32 Turkey
33 Israel
34 Iran
35 Arab Middle East
36 Egypt
37 Ethiopia
38 Other African countries
39 Other North African countries
40 Nigeria
41 South African countries
42 Madagascar
43 Khmer Republic
44 Mongolia
45 Thailand
46 Laos
47 People's Republic of China
48 Japan
49 Democratic People's Republic of Korea
50 Republic of Korea
51 Oceania
52 Philippines
53 Hong Kong
54 Democratic Republic of Vietnam
55 Republic of Vietnam
56 Malaysia
57 Singapore
58 Indonesia
59 Australia
60 New Zealand
61 Afghanistan
62 India
63 Nepal
64 Burma
65 Sri Lanka
66 Pakistan
67 Bangladesh

Source: Godfrey N. Brown, Towards an Education for the 21st Century — A World Perspective. University of Keele (U.K.), 1970 (an inaugural lecture).

as quoted in: CERES, Vol. 6 No. 3 (May-June 1974) pp. 9-10.

0023

Figure 3

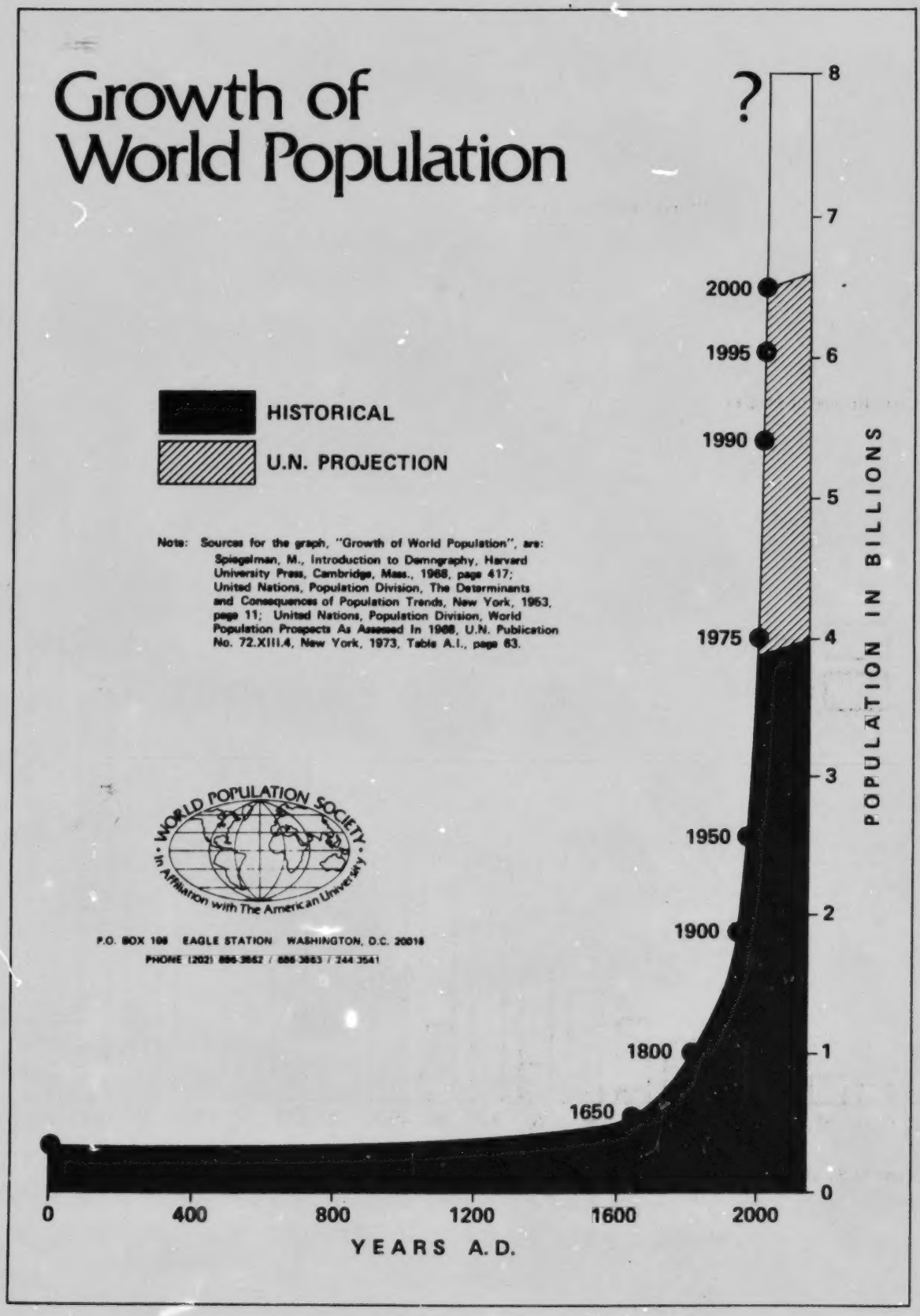
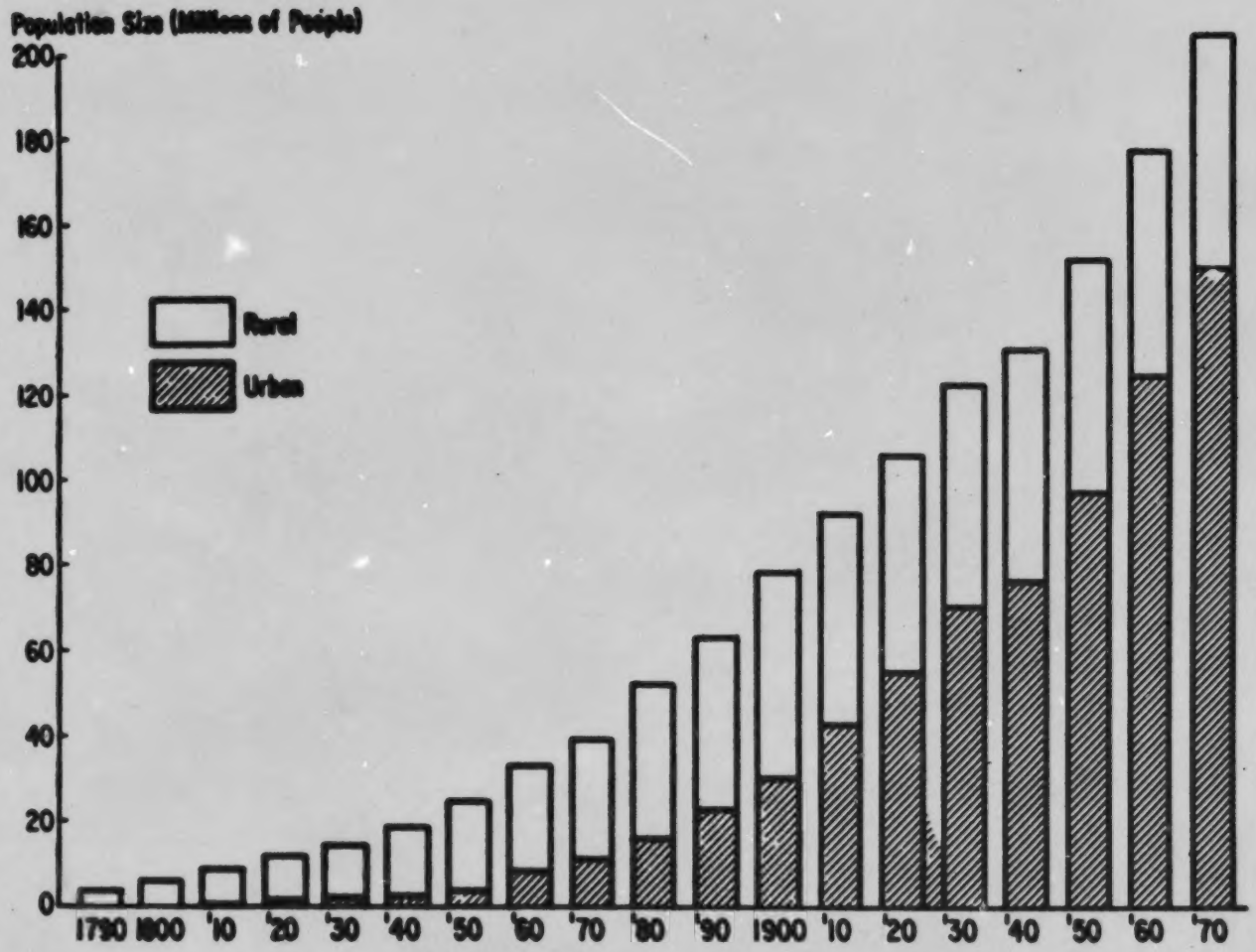

Growth of
World Population
?
HISTORICAL
U.N. PROJECTION
Note: Sources for the graph, "Growth of World Population", are:
Spiegelman, M., Introduction to Demography, Harvard University Press, Cambridge, Mass., 1968, page 417;
United Nations, Population Division, The Determinants and Consequences of Population Trends, New York, 1963, page 11; United Nations, Population Division, World Population Prospects As Assessed In 1968, U.N. Publication No. 72.XIII.4, New York, 1973, Table A.I., page 63.
WORLD POPULATION SOCIETY
In Affiliation with The American University
P.O. BOX 108 EAGLE STATION WASHINGTON, D.C. 20016
PHONE (202) 686-3862 / 686-3863 / 244-3541
2000
1995
1990
1975
1950
1900
1800
1650
8
7
6
5
4
3
2
1
0
POPULATION IN BILLIONS
0
400
800
1200
1600
2000
YEARS A.D.

Figure 4

Urbanization trend in the United States



Source: U.S. Department of Commerce.

population of the developed world increased by 4½ times, the urban population of the less developed world increased by 20 times.[1]

Pressures for Growth Continue[2]

The pressures for continued growth in production, population, and urbanization are enormous. After all, practically everyone is in favor of improving the quality of life and increasing production remains a key element in improving the quality of life. A few of us who live the more affluent life (or a few of our more secure children) may be willing to forgo the prospects of improving our living standards through increased production of goods and services, but for most people the struggle for an "adequate" standard of living will continue the pressure for growth in production.

Population control seems an obvious solution at first glance. After all, wouldn't it make sense to have fewer people each year but continue to produce at a high level? We could balance population and production so that production declines, but if population declines faster, level of living could continue to increase.

Perhaps this policy alternative will be available to future generations, but it doesn't look very likely as a realistic policy for the next 10 or 20 years. This is because of the age structure of today's population.

Figure 5 shows the changing U.S. age profile as our population moves from the post-war baby boom towards the end of the century. Notice how in 1970 a large number of young girls were moving into the childbearing years. Even though these girls are right now having babies at a rate which will yield a completed family size of less than two children on the average, our population still grows at one percent per year. Immigration accounts for some 20 percent of our annual population growth, but new babies account for the other 80 percent. To achieve zero population growth instantly, we would have to cut back our completed family size to about one child and continue this policy for 10 years or so. This is not a very realistic policy alternative.

Our population is now only growing at 1 percent per year. With such a powerful momentum for further population growth in a country like ours, (which is growing slowly) think of what the situation is like for the world as a whole, which is growing at 2 percent per year! Zero population growth may be an attractive goal to strive for, but it's not a very practicable one for the world as a whole for the near future.

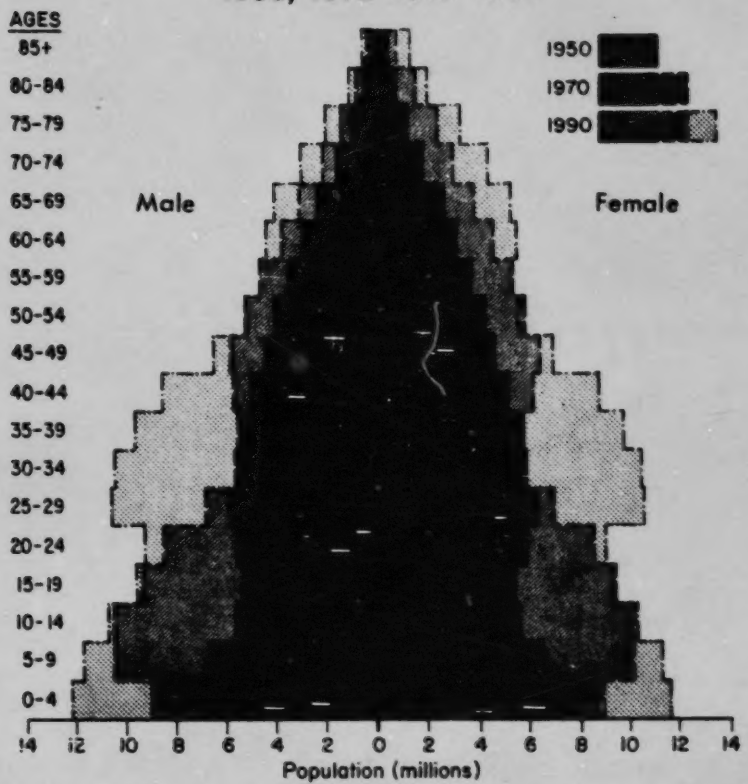
The world has already absorbed about as many people in agriculture as

---

[1] Nathan Keyfitz, "The Numbers and Distribution of Mankind," Environment, Resources, Pollution, and Society, Wm. Murdoch, Ed., (Stamford, Conn., Sinauer, 1971), p. 44

[2] In a small group it would make sense to present the material in this section as part of a discussion of policy alternatives.

FIGURE 5: CHANGING U.S. AGE PROFILE, 1950, 1970 AND 1990



Source: Census Bureau: "Current Population Reports," Series P-25, No. 38, Dec. 18, 1967 and "Detailed Characteristics 1950 Census," Bulletin P-C1.

Population Reference Bureau

The first of the "baby boom" Americans born just after World War II are represented above as they move through early childhood in 1950 (ages 0-4 in the darkest pyramid), the family-forming years in 1970 (ages 20-24 in the middle pyramid) and middle age in 1990 (ages 40-44 in the lightest pyramid).

it can without lowering the standard of living for today's farmers. So if we continue to improve our productivity, and continue to increase our population, we can expect to continue to concentrate ourselves in the great megalopolises of the world.

Environmental Implication of Growth -- External Costs

What are the environmental implications of the kind of growth we have been experiencing -- simultaneous burgeoning of production, population, and urbanization? The shortest phrase with which we could sum it all up would be "external costs." Putting it another way, and quoting economist Kenneth Boulding, "We pay people for the Goods they produce, but do not make them pay for the Bads."

An external cost is a cost of production or consumption which must be borne by society, but which is not met by the producer or consumer. (By contrast, an internal cost, then, is a cost which the producer or consumer recognizes in its accounting system - one which he is very aware of paying. Internal costs are items like rent, wages, interest, taxes, service charges on machinery, the cost of goods purchased, etc.).

We have only recently become aware of external costs as a public problem. And most of us are still only dimly aware of the external costs of our behavior. Thus, a young couple may be well aware of the internal cost to their household of having a third baby. They know that they will have to pay more for medical care, food, diapers, and they know that the child will demand hours and hours of their time. But they probably don't take account, in their thinking, of the extra space in school he will require, the extra parking space his auto will need, nor all the various demands he will add, however so slightly, to the already overburdened biosphere. These are external costs to the young couple.

The paper manufacturer keeps careful account of his internal costs -- labor, rent, taxes, and materials, etc. But, until recently, he hasn't had to worry much about the chemicals and other wastes he dumps into the stream next to his paper mill. For him, pollution is an external effect. It is a cost to society, a social cost. But to him, it's hardly worth taking into account. The only costs that show up in the stockholders report are internal costs. They're the important ones to him.

We can put all the external costs resulting from economic growth into two categories -- resource depletion and resource degradation. Let's consider these separately.

Resource Depletion

As the great production revolution which brought us today's affluent society was just getting going, resource depletion was the farthest thing from people's minds. The problems of production were just too great. But as we found better and better solutions to the problems of production, we began to see problems of resource depletion. This is when the conservation movement began -- back in the time of Teddy Roosevelt's presidency.

Fairfield Osborn tried to get us concerned about resource depletion when he wrote his book called Our Plundered Planet (1948). But it wasn't until much later that concern really began to pick up. We realized that not only were we using up our non-renewable resources at a rapid rate, but that we were using them up at a rate faster than our rapid population growth rate!

M. King Hubbert of the U. S. Geological Survey tried for years to make people aware of the seriousness of the oncoming fossil fuels shortage. Twelve years ago, he published a chart suggesting that our present profligate use of fossil fuels would represent only a short time span in the long sweep of human history -- that the complete cycle of use of fossil fuel would take place once, and only once, and that if we didn't find a suitable substitute in time, the history of human numbers would probably parallel to a large extent the history of fossil fuel usage (Figure 6).

Less dramatic than the energy crisis, but important nevertheless, is the depletion of resources that are renewable, but only slowly renewable -- resources such as forests and the soil.

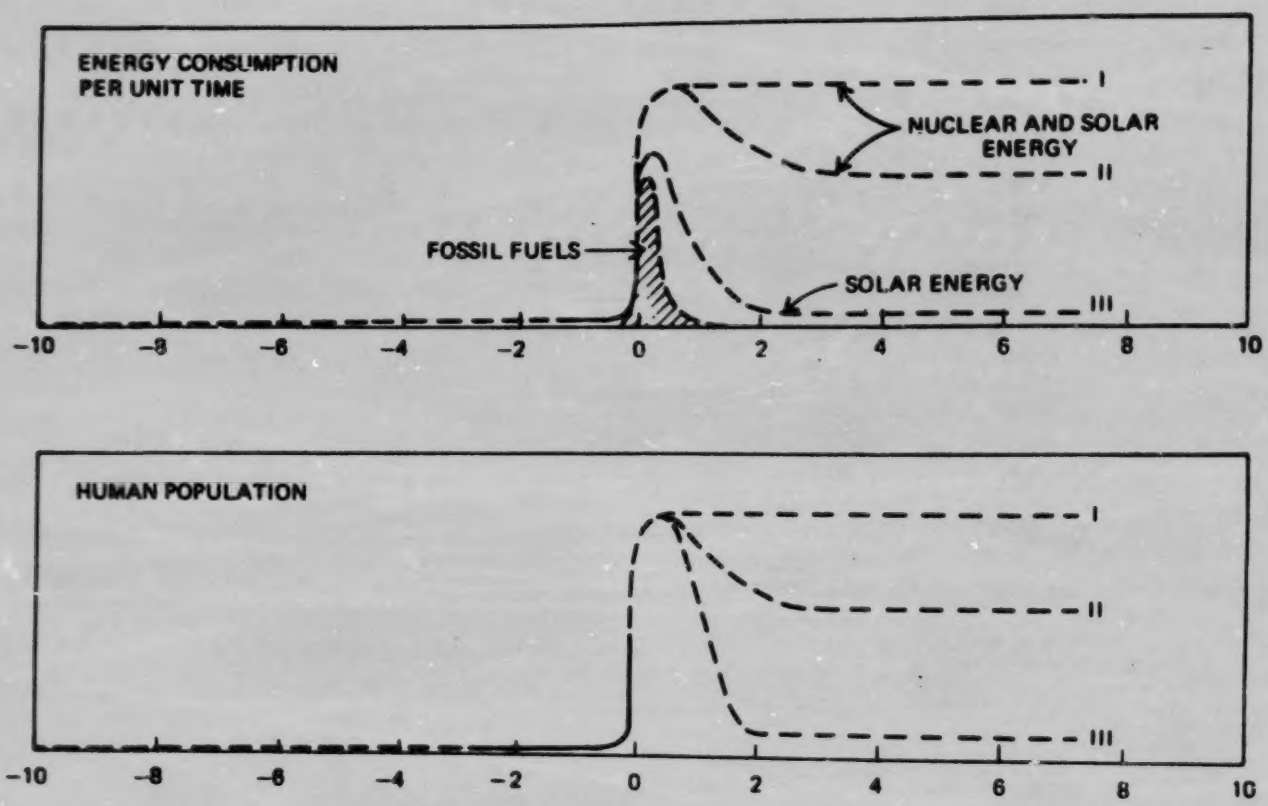
Why is resource depletion an external cost of economic growth? It's a cost of growth because it is one of the prices we have to pay for growth. We are depleting non-renewable, or slowly renewable, resources now for a high standard of living now. In the future, we won't have as many of these resources available to us. Not only is this a cost, but it's an external cost. Denying our grandchildren an abundant reserve of fossil fuels from which they could make plastics, fertilizer, gasoline, and lubricating oils doesn't cost us anything but an occasional pang of guilt. But it may cost our grandchildren plenty!

Resource Degradation

Washington-based humorist Art Buchwald, at the beginning of an article he titled: "And God Saw It Was Good, Then Mankind Took Over..." did a beautiful job of pointing out that as we use up some of our resources (like coal), we degrade or pollute other resources (like water and air):

> IN THE BEGINNING God created Man, which according to all the latest birth control statistics was a big mistake.
>
> And God said, "Let there be light," and there was light, and Man called this light, fire, and at first it was used to warm him and let him cook his food, and protect him from the wild animals. But then Man discovered you could use fire to burn down a forest or burn someone else's hut or tree house, or a witch at a stake, or soft coal or oil, which makes the air turn dark gray and black. And this made Man start to cough and his eyes to run and his sinuses to hurt. And Man finally said, "God, what are you doing to me?"
>
> And after God made the rivers and lakes and streams and oceans, Man dumped all the refuse from the earth into the waters and it killed the fish and the plants and even used up the oxygen, and the waters turned muddy and brown, and

Figure 6



Source: M. King Hubbert, ENERGY RESOURCES: A REPORT TO THE COMMITTEE ON NATURAL RESOURCES, Publication 1000-D, National Academy of Sciences - National Research Council, Washington, D.C. 1962.

> smelled and no one could drink from them or bathe in them, or even sail in them, and finally Man shook his fist at the heavens and said, "for God's sake, knock it off!"

The most commonly recognized form of resource degradation resulting from economic growth is "pollution." We have come to regard pollution, the noun, as the presence in the environment of something (some material such as DDT, or some excess energy such as noise, heat, or light or some faulty design or structure such as a garish billboard) in great enough quantity to affect someone's health, welfare, or enjoyment of the environment. Thus, hot water in a bathtub is not pollution, but hot water in a trout stream is. A siren on the ambulance taking you to the emergency room of the hospital isn't pollution to you, but to someone trying to get to sleep in a nearby hotel, it may be. And cigarette smoke in a crowded elevator -- enjoyable to the smoker -- may be one of the most annoying pollutants in the world to a non-smoker already suffering a bit from claustrophobia.

Pollution costs -- There are a variety of costs associated with pollution. You probably think first about the costs of the pollution itself. There are two types:

> Damage costs--those costs which directly result from a polluting activity, for example, illness and property damage stemming from air pollution, and
>
> Avoidance costs--those costs that people incur in order to avoid or reduce damage costs - for example, the cost of driving farther to find an unpolluted beach.

Then there are the costs associated with preventing pollution. Here there are also two types of costs:

> Abatement costs--the costs associated with reducing the amount of environmental degradation, such as the cost of building sewage treatment plants, and
>
> Transaction costs--resources consumed in making and enforcing policies and regulations to prevent pollution, for example, the costs of monitoring air pollution.

Air and water pollution -- Pollution is probably the most commonly cited type of external cost. And there are so many ways that we pollute! We pollute the air with our factory smokestacks (external cost of production) and we pollute the air more with our automobile exhausts (external cost of consumption). We pollute the rivers, lakes, and streams with our productive and consumptive activities. The external costs of this type of polluting activity include not only reduced recreation possibilities from our water resources, but reduced productivity as food species find it harder to survive and as pollution makes some food from the water unfit for human consumption.

The popular and professional literature is so full of discussion on air and water pollution that it hardly seems necessary to say more about these forms of pollution here. Less attention has been paid to pollution of the

landscape. Here I'm not referring just to the beer can problem and other trash disposal problems, but to the rather more important degradation of the landscape through poor design.

Landscape pollution -- Faulty planning (or no planning at all) has resulted in landscape pollution such as ugly strip cities built up along poorly planned highways. It has resulted in highways with an endless number of commercial entrances that should have been consolidated at a few commercial nodes; ugly highways which shouldn't be there at all or which are made unbearably crowded because of a public policy which sends people scurrying for their cars when they would be taking public transport if it were cheap, efficient, and frequently available; ugly highways leading to monotonous subdivisions of almost identical houses--each backing up on another house instead of on an open space with a bicycle-foot path to link it with shopping, library, school, and recreation.

The highway lobby that pushed for an overbuilt highway system at the expense of public transport, the citizens who developed our inflexible, unimaginitive building codes, and the builders who developed the landscape, were unaware of the costs they were imposing on the buyers of these poorly planned communities. As a matter of fact, our residential areas are sometimes no longer even called communities because, seemingly by design, they have become merely "developments"--hastily designed and hastily built bedroom areas for commuters.

The costs to the residents--mothers forever driving the children places, busses taking children to school in areas where density of housing should be such that they could walk, a lack of community feeling, a lack of ready access to parks and services--are all external to the builders and developers of these subdivisions.

The depersonalized environment -- Perhaps one of the most insidious forms of pollution is the degradation of the social environment through the excessive crowding and bureaucratization that we find today in our urban complexes. There seems to be something about the way we have organized ourselves -- our social resource -- which is leading to a depersonalization of human relationships.

Looking at the uniform crime reports suggests that there may simply be a relationship between crowding and crime (Table 1). But surely there is more to our high urban crime rates, our high national divorce rates, and our high national rate of consumption of tranquilizers than mere density of population. These social phenomena are some of the external costs of the way we have structured our society today. We could do well to cogitate on what has caused them and what public policies might reduce them. Interestingly, they appear to be associated in today's world with those regions which have experienced the most rapid increase in production, population, and urbanization.

TABLE 1

OFFENSES KNOWN BY CITY SIZE, UNITED STATES, 1965

(Rates per 100,000 population)

Size Group	Willful homicide	Forcible rape	Robbery	Aggravated assault	Burglary	Larceny $50 and over	Motor vehicle theft
Cities over 1 million	10	26	221	246	930	734	586
500,000 to 1 million	10	20	165	182	1,009	555	640
250,000 to 500,000	7	15	122	142	1,045	550	468
100,000 to 250,000	6	11	73	151	871	556	353
50,000 to 100,000	4	8	49	85	675	492	297
25,000 to 50,000	3	6	33	71	562	443	212
10,000 to 25,000	2	6	19	67	462	309	141
Under 10,000	2	5	12	62	369	236	99
Rural	4	9	10	58	308	176	51
Suburban area	3	10	28	66	545	359	160
All places	5	12	61	107	605	420	251

Source: "FBI Uniform Crime Reports," 1965, table 1, p. 51 and table 6, p. 94.

0033

Rational Management of Growth -- Internalizing External Costs

Rational management of the growth which appears so inevitable during these next few decades will require the development of social systems which make those who are responsible for creating external costs bear a larger and larger share of these costs themselves. In other words, we need to rig the system so that external costs, as much as possible are transformed into internal costs. Anything, any policy, which makes the producer of an external cost more aware of that cost, anything which makes him bear a greater proportion of that cost himself, can be said to contribute to the internalization of external costs.

There are six possible alternatives which can be considered when attempting to internalize external costs.

Moral Suasion

You can simply try, through advertising, to persuade people to change their behavior pattern. For example, you could admonish them to not toss beer cans out of the car window, but carry them to the recycling center.

Nuisance Doctrine under Tort Law

You can sue under the nuisance doctrine. It's time consuming and expensive, and you might lose, but the legal system allows you to sue for damages if you think you can prove that you are being injured by the unreasonable acts of another. For instance, you might sue me for polluting the air around your resort because of the smell coming from my pea vinery.

Regulations or Police Power

You can set up regulations for ecological protection -- parking regulations on busy streets, banning harmful additives in food, limits on the number of night flights at airports, zoning laws, minimum net-hole size in fishing, etc.

Subsidies

You can pay people for behaving differently. Government, for instance, could subsidize a paper mill to pay for part of the costs of constructing a water treatment facility for its liquid wastes.

Charges -- For Instance, Taxes

You could charge people for certain types of behavior. Government, for instance, could charge the paper mill $.10 per pound of biochemical oxygen demand (BOD) that it adds to the stream. Charges are often preferred to subsidies for two reasons: (1) charges generate money for government while subsidies are costly to government; (2) charges do a better job of internalizing the external costs.

In the case of manufacturing, say of paper, charges for BOD added to the stream would raise the price of the final product by the amount of the charge and thus make the consumer better aware of the real cost of the product

(paper) to society.

Markets in Pollution (or Other) Rights

You could estimate the amount of an activity which you would be willing to permit, and then market the rights to engage in that activity. Thus, in the case of our paper mill, government might decide how much BOD could be added to a stream daily and offer for sale rights to add that much daily. The paper mill, and others, could bid for the rights. Thus, those who had the greatest "need" to pollute a little would have to pay the price--and would be forced to pay more than those who had less "need." The income generated from the sale of such rights could be used to enforce compliance.

Rights wouldn't have to be sold by government. They could be offered free and traded on the open market like certificates.

The idea of establishing a market in rights as a means to rationally internalize external costs is perhaps the most difficult of the six alternative approaches to understand. Nevertheless, it is one frequently worthy of consideration. It could be applied diversely as in markets in rights to make loud noises, to develop land, or to have babies!

Consequences of Internalizing External Costs

Internalizing external costs would have significant, sometimes enormous, repercussions on the economy. That's why it is so often so hard to get an external cost internalized. Let's think through what would happen if we effectively internalized the external costs of the automobile.

If people who bought and used cars had to pay the full external costs of their ecologically destructive activities, many aspects of the economy would change. The price of cars would rise--especially the price of cars with heavily polluting engines. But it is important to stress that the price of all cars--even pollution-free automobiles if we had them--would rise to make their operators aware of the ecological damage they do in terms of, say, cutting up the landscape for superhighways and parking lots.

As the price of cars rose, some of us would spend more on mass transit and less on automobile transit. Bicycle trails would become more common, cutting back further on the quantity of automobile transportation demanded.

As people substituted alternative modes of transportation for the automobile, repercussions would be felt in the auto industry and in the multitude of industries which have been built up to service it or capitalize on it--rubber, cement and concrete, petroleum, construction, service stations, quickie lunch facilities, and so on.

You might have some fun by picking out other potential cost internalizations and working through the kinds of impacts they might have on the economy.

In spite of the economic "dislocations" inevitably resulting from internalizing external costs, we should proceed with them as rapidly as we can. We would all benefit from a system where the true costs of production

and consumption reflected in the prices we had to pay. We need to rig the system as much as we can, so that individuals and groups are confronted as much as possible with internalized external costs. If people were repeatedly confronted internally with the (present) external costs of their behavior, we would go a long way toward assuring that we have the highest possible quality of life for the humans on this earth for this and for future generations.

Selected Readings

Foster, Phillips. Introduction to Environmental Science. Homewood, Illinois: Irwin, 1972, Chapters 12-21.

Foster, Phillips et al. Transferable Development Rights--Are They a Step in the Direction of Better Land Use Management? Extension Bulletin, in progress.

Meadows, Donella et al. Limits to Growth. New York: Universe Books, 1972.

Whyte, William H. The Last Landscape. Garden City, New York: Doubleday Anchor, 1970.

SOCIOLOGICAL IMPLICATIONS OF ECONOMIC DEVELOPMENT

Ward W. Bauder

Mr. Bellows has defined economic development as an increase in per capita output resulting from change or innovation. He identifies two principal ways that increased per capita output occurs: (1) New machines, new practices, or new materials enabling more output from the same labor and, (2) A new firm or industry in a community where labor is partially unemployed or underemployed enabling more output from the same population. These two types of development can have quite different impacts on the community.

More output from the same labor is a goal that almost all people could agree on. But under some circumstances, increased labor output can have decidedly detrimental effects on the social institutions of a community. For example, if the first type of development occurs without the second in a single industry community such as an agricultural or lumbering or coal mining community, the result can be widespread unemployment and underemployment and eventually out-migration with disastrous consequences to community organizations and institutions. This happened to thousands of agricultural communities in America. Increased labor output in agriculture resulted in a decline in farm population from 32 million in 1910 (the earliest date for which farm population estimates are available) to 9.5 million in 1970. The decline in agricultural employment and the consequent out-migration from agricultural communities has had a devastating impact on the social institutions of agricultural communities. Thousands of small agricultural communities and their social institutions disappeared or were absorbed into larger communities, a process which was accelerated by technological developments in transportation and communication that greatly expanded the geographic scope of human association.

Mr. Bellows' second form of economic development - a new firm or industry in a community where labor is partially unemployed or underemployed, enabling more output from the same population - is a natural solution for the problems created in one-industry communities suffering the effects of the first form. But this has not occurred with sufficient frequency to achieve balanced development in rural areas.

Even the second type of development can have detrimental effects on local communities if not planned or tailored to the local situation. Addition of industry to communities in too large doses can result in rapid in-migra-

---

Ward W. Bauder is Sociologist, Economic Research Service, U.S. Department of Agriculture, and Professor of Rural Sociology, Cornell University.

p. 34 blank

tion and consequent strain on the capacity of existing community organizations and institutions to service the larger and usually more heterogenous population. Also, addition of industry not suited to the occupational and institutional base of the community can produce distortions in the institutional framework of the community and levy excessive costs on certain segments of the population. Ideally, coordination of the two processes of development would avoid decline or excessive growth of community population, but uneven distribution of natural resources and uneven development of technology has made this difficult.

Furthermore, economic development is associated in the popular mind with progress in man's conquest of nature. As a consequence, it has achieved a halo and is often viewed with such a strong positive bias that its negative effects are ignored. My purpose is not to condemn economic development but to try to move the halo far enough to one side so that the glare of its light does not prevent us from seeing its full impact. I want to stress the need for more comprehensive socially-oriented planning in the application of technology to production. Although there probably is no such thing as unplanned development, much development planning is not sufficiently comprehensive in terms of the total impact on society. Too frequently, non-comprehensive development planning is like trying to use the virus that caused the disease to cure the patient without the safeguards of an immunization process.

In discussing the sociological implications of economic development, I wish to first mention briefly the impact of population redistribution on the demographic characteristics of the community population. Secondly, I want to describe in some detail three structural dimensions of communities that will facilitate understanding of the impact of economic development on communities and their social institutions. And lastly, I will outline some of the social engineering problems inherent in efforts to achieve controlled and balanced economic growth.

Demographic Effects of Population Redistribution

The most visible effects of population redistribution on communities are changes in the demographic characteristics. In communities of declining employment opportunity, the pressure to migrate is heaviest among young adults. Thus, over time, population in the early and middle-adult age groups - the productive age groups - declines and the ratio of persons in the dependent age groups - children and old persons - per person in the productive age group increases. Areas of rapidly increasing employment opportunity and in-migration experience an increase in young families and a lowering of the median age. Such changes in age composition eventually produce changes in the institutional structure of a community.

Migration may also change the class or the ethnic structure of communities. It tends to reduce the middle class in communities of out-migration and it often introduces people with different cultural backgrounds into communities of in-migration. The latter is most noticeable when associated with racial or ethnic characteristics, but occurs even when the migrants are not so readily identified. A frequent comment of long-term residents in communities with a new industry is, "I like the increase in income and trade

that the factory has brought, but I'm not too happy about some of the people it brought into the community."

The Social Structure of a Community

Communities are more than aggregates of people with differing demographic characteristics. They are also more than concentrations of residences, business places, factories, farms and connecting networks of roads, telephone lines, etc.; they are social structures. Organizations and institutions are their building blocks.[1] Knowledge of the nature of these building blocks and their relationship to each other is essential in understanding how communities operate. Unlike bricks which are a standard size and are essentially interchangeable and thus have no special order of appearance in a wall or a building, the building blocks of communities vary in their function and fit together in a special order. Institutions or organizations with highly specialized functions do not fit in a community with an insufficient base for that special function. For example, it is obvious that a news syndicate or a major publishing house could not operate successfully in a small town in the Adirondack region of New York even if the town were physically accessible. The specialized skills and information needed to support such operations are not to be found in such a community and probably could not be brought in even at great cost.

Studies of a large number of communities reveal that a hierarchical arrangement exists among the building blocks of communities such that the presence of one item - for example, a hospital, implies the presence of other items below it in the hierarchy.[2,3,4] This ordering of institutions reflects the level of differentiation in the community, i.e., the extent of specialization that has occurred in occupational and organizational roles and the presence or absence of related skills in the population. One util-

---

[1]Frank W. Young and Gerald C. Wheelock, Macrosocial Accounting for Municipalities in the Philippines: Rural Banks and Credit Cooperatives Cornell International Agriculture Bulletin 26, New York State College of Agriculture and Life Sciences (Ithaca, New York, 1973).

[2]Frank W. Young and E. D. MacConnoll, "Structural Differentiation of Communities: An Aerial Photographic Study," Rural Sociology 32 (September, 1967), pp. 334-45.

[3]Frank W. Young and Isao Fujimoto, "Social Differentiation in Latin American Communities," Economic Development and Cultural Change 13 (April, 1965), pp. 344-86.

[4]Frank W. Young and Ruth C. Young, "The Sequence and Direction of Community Growth: A Cross-Cultural Generalization," Rural Sociology, 27 (December, 1962), pp. 374-86.

ity of such knowledge is that it provides important clues regarding the probable fit of a new service or function.[5] Also, the presence of gaps or missing items in the hierarchy of a community provides clues regarding the direction of change in community structure. If gaps are present, i.e., if items that commonly appear in communities of a particular size or type are missing, it is reasonable to expect that either the gaps will be filled soon or, if the gap is near the top of the hierarchy, the top item is ahead of its time and may be in danger of failing.

Hierarchies of items, or differentiation scales as they are generally called, have been developed for communities or social units of different size--for cities and villages, for counties, for multi-county regions, for states and for nations.[6,7]

Everyone is familiar with the tendency for human relationships to become more or less fixed, i.e., institutionalized. This gives society a necessary and desirable element of stability. However, when restrictions on the flow of information and interaction between groups in a community develop, a community may be described as rigid and lacking in flexibility and in the ability to adjust readily to the changing circumstances of modern industrial societies.

Major contributors to rigidity are events that tend to distinguish one group from another and restrict communication between them, i.e., events that encourage segmentation of the community's population into more or less closed systems, usually with a vertical orientation to one another with regard to power relationships. This can occur when a new group of people moves into a community or when a substantial proportion of the population leaves a community.

A third structural dimension important in understanding the impact of economic development on communities are the ties or linkages between communities. Individual communities are part of larger systems and have connections with other communities. These connections are important sources of change in community structure.

Impact of Economic Development on Community Social Structure

Each of the structural dimensions just described influences and is influenced by the processes of economic development.

---

[5]Ka Hua Ting, Multipliers, Linkages and Differentiation: A Case Study of Kent County, New Brunswick, New Brunswick New Start, Report No. R-73-124 (Richibucto, New Brunswick, 1973).

[6]Ka Hua Ting and Jose A. Moreno, "Economic Development and Social Rigidity: A Comparative Study of Forty-Eight States," Economic Development and Cultural Change, 13 (July, 1965), pp. 439-52.

[7]Pierre Clavel, "The Politics of Planning: The Case of Non-Metropolitan Regions," in Thad L. Boyle and George T. Lathrop Planning and Politics: Uneasy Partnership (Minneapolis, Minn.: Bobbs-Merrill Company, Inc., 1970).

Differentiation

Technological change in the form of new machines and new practices or new materials that increase labor output will influence the level of differentiation in a community. New technology usually requires new specialized skills; thus, the introduction of new technology in production can be expected to increase differentiation. In fact, it has been claimed that technological change is the primary cause of increased specialization.[8] However, where increased labor efficiency is not accompanied by expansion in alternative employment opportunities (as has occurred in many single industry communities like agricultural, mining, lumbering, or fishing communities), unemployment and underemployment develop. In such communities, population is likely to stabilize or decline because of out-migration. When that happens, the process of differentiation can be, at least partially, reversed. Some occupations and some community organizations become less specialized. An electrician becomes a general handyman, the Chamber of Commerce disappears and a service club becomes more generalized in its objectives by taking on some of the functions of the defunct Chamber of Commerce. Occupational roles become less distinct from family and community roles in determining individual behavior.

Segmentation and Rigidity

If new technology results in a heavy surplus of labor in a community, causing out-migration, or if the introduction of new industry requires heavy in-migration, forces that tend to segment a population in two vertical layers are likely to be set in motion and result in a decline in flexibility and ability of the community to adjust to change. Because technologically motivated migration tends to be selective, it removes certain classes or types of people from communities with declining employment opportunities and introduces new classes or types of people into communities with increasing employment opportunities. This increases segmentation which in turn hinders communication and blocks the free flow of information in the community.

There is evidence from studies of rural poverty that out-migration from rural communities has increased class differentials by reducing the middle group and producing a trend toward a two class vs. the more usual three class system. Reduction of the middle class restricts intercommunication between classes, and reduces the access of lower classes to social services and to decision-making regarding such services.[9]

Evidence that migration can produce segmentation in urban places is abundantly manifest in the problems of the inner city and its ghettos, and in the conflicts between central cities and surrounding suburban areas. Current conflicts over a program of school busing, designed to facilitate desegregation of the races in education, have turned the flood-light on one

---

[8] Sergio Sismondo, A Concept, Not a Proxy: The Meaning and Measurements of Differentiation New Brunswick New Start Report No. R-73-133 (Richibucto, New Brunswick, 1973).

[9] Jerry D. Stockdale, "Services for the Rural Poor," Department of Rural Sociology, Cornell University (Ithaca, New York, 1972) mimeographed.

facet of segmentation in urban society. Another area of conflict associated with segmentation is in the urban fringe communities where suburbanites and other refugees from the city have come in contact with an indigenous rural population.

Intercommunity Linkages

Connections or ties between communities are almost always involved in the second type of economic development described by Mr. Bellows. The introduction of a new firm, and particularly the introduction of a new industry, typically involves action of an establishment or firm in another, usually a larger community. A major source of stimulus to change in non-metropolitan communities is the establishment of organizational linkages with metropolitan communities.[10] In addition to branch manufacturing plants, and branches of business or commercial firms, the location of a new state or federal agency or the establishment of a local office of a state or national association are examples of such linkages.

Linkages with larger communities introduce new knowledge, new practices, and new resources into a community and tend to enlarge its institutional and organizational capacity. If they fit properly into the existing structure, i.e., if the supporting base of occupational and organizational resources is present, such linkages can increase flexibility by generating a greater flow of information and a higher rate of interaction. A substantial multiplier effect on incomes can occur as the level of interaction and the flexibility of community structures is increased.[11] If, however, the linkage creates gaps in the scale of community differentiation - by introducing a service or function not suited to the existing occupational and organizational base - or if it results in excessive in-migration, vertical segmentation can occur and flexibility may be reduced. The balance of power in the decision-making process may be tipped toward the new plant or new agency and lines of communication with the lower, less developed, segments of the community become less open and take on a one-way character. Decision-making patterns become more like those typical of the company town and the community's ability to respond adequately to the needs of all its people, particularly the needs of the disadvantaged, will decline.

In single industry communities suffering loss of population because of new technology, some of the loss in institutional and organizational capacity can be offset with linkages to other communities, e.g., consolidation of schools, rural free delivery star routes, etc. can tie the local population

---

[10] Young and Fujimoto, op. cit.

Paul R. Eberts, "A Theoretical Perspective on Community Change and Development," A paper presented to the Association of Southern Agricultural Workers (Jacksonville, Fla., 1971).

[11] Ting, op. cit.

to a larger system with the capacity to deliver the needed services.

An Empirical Example

Several years ago, I was involved in a study of industrial development in a rural county that will serve to illustrate some of the general propositions I have presented, together with some of the social costs and benefits of economic development.

In 1957, Ormet Corporation - a 50-50 subsidiary of Olin-Mathieson Chemical Corporation and Revere Copper and Brass - decided to build a multi-million dollar aluminum processing plant on about the only level piece of land on the Ohio side of the Ohio River in Monroe County, Ohio. Monroe was one of the poorest, if not the poorest and least developed, counties in the state. Since this appeared to be an excellent opportunity to study the impact of industry on a rural county, we (U.S.D.A., in cooperation with Ohio State University) organized a study. Using Monroe as the treatment county and a nearby county as a control county, we made a bench mark study while the new plants were being constructed. A second study followed five years later.[12]

To my knowledge, the decision to locate an aluminum processing facility in Monroe County was made solely by the management of the corporations involved. Although Monroe County leaders were kept fairly well informed, they had no real input into the decision. The size and complexity of the new operations should have made it obvious that they greatly exceeded the capacity of the social-structural base of Monroe County and its rural communities. Nevertheless, company officials, if they even gave the social base of Monroe County serious thought, found the attraction of the site with its access to water transportation and coal for energy outweighed any disadvantage of an inadequate community institutional base. Furthermore, the corporations had sufficient resources of their own, or had sufficient access to the resources of the region and nearby larger communities, to compensate for the lack of local facilities.

Most businessmen and local leaders in Monroe County anticipated great things as a result of the new industry and began to plan accordingly. For example, they assumed the new jobs would be available to local people or people who would move into the county. Employment for Monroe County residents did increase, but almost exclusively in the common labor or lower skilled occupations. The major increase in employment, which was in the technical and professional occupations, did not benefit the county very much, because most of the people in these jobs had to come from the outside and they chose not to live in Monroe County. Many of them chose instead to live across the river in New Martinsville, West Virginia, where a more complete array of community facilities and services was available. As a consequence, three new housing development in Monroe County were financial failures. In 1962, when we made the re-study, one-third of the new homes

---

[12] Wade H. Andrews, Ward W. Bauder, and Everett M. Rogers, Benchmarks for Rural Industrialization Ohio State Experiment Station Bulletin 870 (Wooster, Ohio, 1960).

in these developments were empty. Some had never been occupied.[13]

Clearly, a community without motels or a public transportaion link to the outside (not even bus service) - not to mention hospitals, clinics, and a host of other middle-level services, - was not very attractive to people accustomed to these services. Had local businessmen been more cognizant of the process of differentiation, they could have planned differently and saved themselves some disappointment.

Economic Development and Social Conflict

Another product of Type two economic development is the increased potential for conflict associated with in-migration and the segmentation of the community. A situation which I know personally, and which I suspect is duplicated with small variations in many communities, will illustrate.

I live in the suburban end of a rural town (township) adjacent to Ithaca, New York. Town government has been, and still is, dominated by people with rural views. These views include a distrust of zoning and other attempts at interfering with individual property rights. But linkages with the larger community, in the form of shopping centers and apartment complexes promoted by developers in league with town officials interested in increasing the tax base for the town as a whole, have encouraged in-migration. Differentiation has increased and, although the flow of information is probably greater than it was before suburban growth began, the community has become divided into special interest groups frequently in conflict with each other.

Generally, there is a division of the population into new and old residents with the old on top because of their control of town officials. This has created a potential for conflict for 15-20 years. In the past two years, conflict has escalated from election contests over zoning to court battles over attempts to incorporate a village and over the development of sewer and water districts. In the spring of 1974, Pyramid Corporation, a Syracuse company that builds shopping centers, was granted a permit to build a new covered-mall shopping center in the area. This has precipitated the latest phase in the conflict and identified it as part of a county-wide problem. Various groups in the town and in the county have come alive and are active with petitions, challenges to town board decisions, and actual or threatened court actions.

The Need for New Social Technology

The two cases just described serve to call attention to a need for new social technology. The related processes of economic development, increasing complexity and interdependency in the political economy, increasing

---

[13] Wade H. Andrews and Ward W. Bauder, The Effects of Industrialization on a Rural County: Comparison of Social Change in Monroe and Noble Counties of Ohio Ohio Agricultural Research and Development Center Department Series A.E. 407 (Wooster, Ohio, 1968).

mobility of people and the increasing predominance of transient attachments to secondary groups have placed great strain on the mechanisms of community decision-making and social control. The problem is manifest at all levels of society, but it is especially serious at the local community level which has traditionally been the primary source of social stability and has provided the principal opportunity for people to identify with something larger than themselves. The traditional bases for solidarity -- the common ways of looking at and interpreting events, characteristic of small local communities -- are greatly diminished or largely gone and there is need to create at least a minimal set of common symbols, common meanings, associated with the new larger geographic units.[14]

In the Ithaca suburban situation, several practical questions beg for answers. How can the broader Ithaca or Tompkins County community resolve the conflicts among the legitimate local political units (i.e., city, town and village) and a wide variety of specific local concerns and still conform to the needs of the larger society as expressed in state and federal regulations, without violating the rights of or levying excessive costs on certain groups? How can the community insure adequate consideration for all the special interests involved; for the developers; for the shoppers of the trade area who want to drive to a center, park free and shop for a wide variety of goods and services in the comfort of a covered air-conditioned mall; for the downtown Ithaca merchants who are building their own mall, but have to rely on parking garages and parking lots with meters to accommodate the automobiles; for the environmentalists who do not want to exchange 60 acres of trees and grass for 60 acres of macadam and roof tops; for the traffic controllers; and for the suburban residents worried about increased water runoff, traffic congestion, and water, air and noise pollution? This list just mentions those concerns that come most immediately to mind, and there are no doubt others. How can all these concerns, some of which are almost irreconcilably opposed, be integrated into a single program?

Present decision-making structures at the local community level are inadequate in many ways. Specialization encourages fragmentation of interests, and the pressure of competition within and between special interests limits the number of people and organizations that can afford to allocate the necessary resources to develop a comprehensive overview. A consequence is a general lack of comprehensive forward-looking planning capacity. This is manifest in (1) a lack of social structure for planning, (2) a lack of people with the knowledge and skills to project trends and develop forward-looking overviews and (3) a lack of appreciation for the value of comprehensive community-wide planning. To illustrate the latter, at one point in the shopping mall controversy a member of the county government suggested that a committee of the county government should review the situation and make recommendations. Another member of county government, this one representing the town (township) involved, is reported to have said in essence, "The county should keep its cotton pickin' hands out of town affairs."

---

[14]Alan J. Hahn, Organization for Development-The MIDNY Experience: 1966-68 Department of Rural Sociology Regional Development Studies No. 6, Cornell University (Ithaca, New York, 1969).

A parallel need is the need for social mechanisms for resolving conflicts arising from opposing and often essentially irreconcilable special interests. Resolution of conflict in the courts is not very efficient and also not very effective in dispensing justice when the legal system is too closely tied to certain special interests. In the Ithaca suburban shopping center controversy, the citizens' group opposing uncontrolled development has had difficulty finding a lawyer to represent it in court. All the experienced lawyers are too busy or are associated in one way or another with the opposition.

Ithaca, like many developed or developing communities does not lack people with ideas and organizational skills, but is handicapped by out-moded decision-making procedures and a lack of comprehensive planning capacity necessary to capitalize on the ideas and organizational energies of its population.

An important feature of a comprehensive planning structure in a democratic system is a provision for interplay between the ideas and suggestions of lay people and the special knowledge and analytic skills of professionals trained in social analysis and planning. An example from the Canadian New Start experience will illustrate.

In the early days of that project, a series of meetings with 200 community leaders produced a list of 90 different program suggestions. None of these suggestions were directly implemented, primarily because they dealt with the past and suggested renovation of activities which had died 20-30 years earlier. But by adding the knowledge of the technical and professional staff, trained to project or simulate, projects evolved which could be and were implemented.[15]

Organizational provision for input from professionally trained staff who are obligated to represent the interests of the total community and are responsive to suggestions from laymen is an especially pressing need. In the two situations I have described, the community, or those in position to act for the community, found themselves in the position of reacting to a set of conditions brought about by the actions of a company and/or individuals motivated primarily by private gain. Generally, the actions of these developers had the potential of both good and bad effects on the community, so it is not fair to accuse them of malicious intent. The crucial point is that the developers, often outsiders, had the initiative and the community or its representatives reacted to the problems produced by their actions. A preferred situation would be for the community, through its representatives, to take the initiative in determining the general direction of development.

We need to develop more fully the social technology and the organiza-

---

[15]Sergio Sismondo, New Brunswick New Start: An Experimental Action-Research Program in Community and Regional Development and Monitored Social Change New Brunswick New Start Inc. Report No. R-73-128 (Richibucto, New Brunswick, 1973).

tional machinery which will allow the individual developer or land speculator to make his contribution but insure that it is made under the controlled conditions of a comprehensive forward-looking plan that represents the needs of the total community.

This is a large order and one that presents many questions that beg for answers. I regret that I could not provide many answers. Perhaps we can begin that process by agreeing that the development of the knowledge and the organizational skills for comprehensive planning is a necessary first step to correct some of the social ills produced by the uncontrolled economic development of the past and to make possible wiser applications of new technology in the future.

A FRAMEWORK FOR ANALYZING THE FISCAL IMPACT OF ECONOMIC DEVELOPMENT ON A COMMUNITY

Frank Goode

I. INTRODUCTION

Alternative types of economic development can have differing impacts on the fiscal operation of local governments, and different communities will be affected differently by similar types of economic development. If a community can exercise control over the types of economic development that will take place, then it is the responsibility of the community's elected officials to carefully assess the fiscal impact of alternative types of development. An example of the role played by the fiscal impacts of development in the community decision process is provided by the "no-growth" policies adopted by both rural and urban communities. The "no-growth" policies adopted by some urban communities have resulted in part from a belief by the citizens that economic development will require a substantial increase in the level of public services being provided. In addition, these citizens believe that they will have to bear a large part of the cost of providing the extra services even though they will receive few, if any, of the benefits. For example, the citizens believe that economic development will make it necessary to extend sewer services to undeveloped areas. Extending sewer service will require the construction of additional sewage lines and possible new sewer treatment facilities. The citizens believe that they will be called upon to bear much of the cost associated with constructing these new facilities and since they have adequate sewage facilities, they will receive none of the benefits from the new facilities. It would be an overstatement to suggest that fiscal considerations are the only reason for "no-growth" policies, but clearly they play a major role in these decisions. Although a community should let the fiscal impact of economic development play a major role in the decision-making process, it is equally important that other impacts of economic development be considered. That is, the adverse fiscal impact of a particular type of economic development may be more than compensated for by the desirable impacts of that development. A good example of such a trade-off is provided by the decisions made in several rural communities in Kentucky.[1]

Frank Goode is Assistant Professor of Agricultural Economics, The Pennsylvania State University, University Park.

[1]Charles B. Garrison, The Impact of New Industry on Local Government Finances in Five Small Towns in Kentucky, Agricultural Economic Report 191, (U. S. Department of Agriculture, Economic Research Service, 1970).

n. 46 blank

These communities were faced with a decision concerning whether or not to allow (or encourage) a firm to open a new plant in their community. In most cases, the new plant had an adverse impact on the fiscal operations of the community. However, many of the communities used various types of inducement to get the firms to locate the plants in their community. Presumably, these communities had made the decision that the impact of the new plant on employment was more important than the adverse fiscal impact.

One of the problems involved in this decision-making process is that the citizens of a community and their elected representatives do not know what the fiscal impact of economic development will be. The citizens of the urban community may be mistaken in their belief that they will be required to pay much of the cost of extending the sewer system. The Kentucky communities may not have realized that the new plants in their community would have an adverse fiscal impact. The purpose of this paper is to provide a framework that can be used to estimate the fiscal impact of various types of economic developments on communities. The approach to be used here will be to develop a very simple framework to highlight four points that should be considered when making these estimates. Those who are interested in a more complex framework are referred to the MUNIES system developed by Gale.[2]

II. THE IMPACT OF ECONOMIC DEVELOPMENT ON SERVICES DEMANDED AND REVENUES COLLECTED

Determining the fiscal impact of economic development is not merely a matter of comparing the cost of new services provided to the new revenues collected. As was implied by the "no-growth" example, the essential question is who benefits from the new services and who pays for them. In that example, the citizens did not benefit from the services that they were paying for.

New firms and/or residents are typically associated with the economic development of a community. Thus, determining the fiscal impact of economic development involves comparing the cost of providing services for the new residents and/or firms to the additional revenue collected from those who benefit from economic development.

The first step in this procedure is to identify the change in services provided that result from economic development. The cost associated with the change in services is allocated to new and old residents depending upon who benefits from the services. The second step is to determine the change in revenues associated with economic development and to identify the sources of these new revenues. To carry out these steps it is useful to have a checklist of the services provided by and revenues available to communities. Two such lists are provided in Table 1.

The procedures used to determine the fiscal impact of economic devel-

---

[2]Dennis E. Gale, The Municipal Impact Evaluation System: Computer Assisted Cost/Revenue Analysis of Urban Development, Report 294, Planning Advisory Service (American Society of Planning Officials, 1973).

opment on a community will be illustrated using the location of a new plant in the community, as an example. It is assumed that 25 families will move into the community as a result of the new plant. Also, it is assumed that the new plant will employ 200 local residents.

A. Cost of Providing the New Services that Are Associated with Economic Development

A reasonable starting place in this procedure is to simply go down the list of services provided in Table 1 and identify those services that are likely to be affected by economic development in the community. It is likely that a new plant locating in a community will have an effect on most of the services listed in Table 1. It is very important to identify all of the affected services, not just the services for which the demand will increase. For many communities, it is likely that some of the 200 employees of the new plant were previously unemployed and receiving some type of welfare benefits. If welfare programs are being provided by community or county governments, then one of the impacts of a new plant may be to substantially decrease the demand for welfare services.

After having identified the services that will be affected by economic development, the next step in the procedure is to determine the cost associated with changes in the level of services provided. Because of the unique nature of individual communities, it is impossible to provide a universally applicable formula for estimating the cost of new services. The best that can be done is to provide a set of general principles that should be applied to individual cases. The first principle that must be understood and applied is the concept of marginal cost. In estimating the cost of new services the relevant consideration is with the additional cost resulting from economic development. That is, we are attempting to estimate the total cost of services after economic development has taken place, and subtract from that the total cost of services that would have been required even if economic development had not taken place. Assume that the economic development will result in 10 children of school age moving into the community. If these 10 children can be absorbed into the existing school system without requiring the school system to make additional expenditures on teachers, building, or equipment, then the marginal cost of these 10 children is zero. In essence, these 10 children have no impact on the fiscal operations of the community.

The second principle that must be taken into account is variation in the quality of services as well as in the quantity of services. If the quality of service is substantially improved as a result of economic development, it is not appropriate to associate the entire change in the cost of providing that service with economic development. For example, assume that the 10 new school children could not be absorbed into the current school system without additional expenditures. Assume that the local school board decided that an additional teacher and classroom would be required to handle the 10 new students. Also, the school board decided that since they have to hire an additional teacher and build an additional classroom that they should hire a teacher with some musical training and construct the classroom with accoustical features that will allow it to be used for a music program. Even though the 10 new students provided the motivation for hiring the new teacher and constructing the new classroom, the entire cost of these two items

Table 1

Services Provided by and Sources of Revenue for Community Governments[1]

Services			Revenues		
	Beneficiaries			Incidence	
Type	Old Residents	New Residents	Source	Old Residents	New Residents
1. General government	___	___	1. Real estate tax	___	___
2. Sewer	___	___	2. Occupation tax	___	___
3. Refuse	___	___	3. Per capita tax	___	___
4. Health	___	___	4. Income tax	___	___
5. Police	___	___	5. Property transfer tax	___	___
6. Fire	___	___	6. Sales tax	___	___
7. Streets	___	___	7. License tax	___	___
8. Libraries	___	___	8. Fines	___	___
9. Recreation	___	___	9. Grants	___	___
10. Water	___	___	10. User fees	___	___
11. Welfare	___	___			
12. Education	___	___			

[1] In essence, these categories of services and revenues are taken from: Commonwealth of Pennsylvania Local Government Financial Statistics, published by Pennsylvania Department of Community Affairs.

should not be assigned to the 10 new students. The old students will benefit from the new music program that is now available and they should bear part of the cost of the new teacher and classroom.

To further illustrate the application of these two principles, several of the services listed in Table 1 will be discussed in the context of the plant location example.

1. General Government - It is unlikely that the impact of the plant will be sufficiently great to alter the expenditures required for general government services.

2. Sewer - One of the important considerations in this and other services is whether or not substantial capital expenditures will be required to extend sewer lines to the new plant and/or to the homes of the new families. If both the new plant and families can connect to the existing sewer system, then little or no cost should be incurred by the local government. However, if new sewer lines are associated with the new plant or families, then the cost of this construction should be charged to the new families and the plant. However, care should be taken not to overcharge. That is, the city may decide that while they are constructing the new sewer line to the plant they should construct one sufficiently large to service two or three other plants that may come in to the community in the future. If so, the new plant should be assigned only part of the construction cost associated with the new line.

3. Refuse - Suppose that after the new plant and families arrive in the community the local government finds itself facing the following alternatives with respect to refuse collection: (1) By paying their workers overtime to work a sixth day during the week the refuse generated by the new plant and families can be collected; (2) The community can purchase a new refuse collection truck that can handle the new families as well as the old families with the same labor cost as previously required. In addition, if the community buys the new truck, they can provide refuse collection weekly rather than every other week as has been the case in the past.

If the community exercised the second option, the change in cost of providing refuse collection would be the price of the new collection truck. However, it would not be appropriate to assign the cost of the new truck to the plant and new families because the old residents of the community are now receiving better service. Some judgment is required in these situations concerning the assignment of the cost. One option is to assign the additional labor and maintenance cost that would have been involved in providing refuse collection by using the old truck. Another alternative is to assign the new firm and residents the pro rata share of the new truck and labor involved. A third alternative would be to assume that the community would buy the new truck even if the new plant did not move in and assign the new plant and citizens only the additional labor cost involved in providing them with service.

4. Health - It is unlikely that the plant's location would require additional health facilities in a community. However, it may be true that the new plant has certain health hazards involved in the production process and the hospital feels an obligation to provide a new service. Here again, the cost of the new service should not be assigned only to the new plant assuming

the new service is available to and used by the old residents in the community.

Items 5 through 10 are similar enough to those previously discussed that no new insights would be gained by considering them. However, items 11 and 12 will be discussed in detail.

11. Welfare - It is not uncommon, in fact, it is likely to be the case that economic development of a community will reduce the demand for certain types of services. The more obvious of these would be welfare services and to the extent that local communities are financing part of these services, the cost of providing the service will decrease. For example, if the new plant employs 200 local residents it is likely that a substantial part of these new employees were previously unemployed or underemployed. If so, then it is likely that the demand for direct welfare payments, food stamps, and welfare counseling services will decrease and therefore the cost of providing these services will decrease. It is extremely important to keep this phenomenon in mind. For example, if the new plant had a health program which paid for annual medical check-ups for its employees, then it is conceivable that the quantity of public health services demanded in the community could go down substantially.

12. Education - It is worthwhile to discuss the impact of economic development on the level of educational services demanded, both because education typically represents a substantial part of the budget of local government and because it demonstrates very well the two basic concepts that must be kept in mind when estimating the cost of new services. First, suppose that each of the new families in the community has three school-age children that will require educational services. The additional cost of providing education to these children will depend to a large degree on the existing situation in the school system. If the classes in the school system were already near capacity, then the additional load placed by the new students may be sufficient to require the hiring of new teachers and conceivably the construction of new classroom space. On the other hand, if the classes were previously relatively small and the new students could be absorbed with ease, then little or no cost should be assigned to the new students. Assume for the moment that three additional teachers have to be hired and a new classroom has to be constructed. The cost of the teachers and classroom should be assigned to the new families unless the new teachers and classroom make it possible to provide additional educational programs that were previously not provided. For example, the new teachers may specialize in areas that were previously not a part of the curriculum in the school and the new classroom provides the facilities for these teachers to carry out their specialties. Presumably, students that were in the school previously would have access to these new programs and, as a result, the cost of the new teachers and the classroom should not be assigned entirely to the new students.

No attempts were made here to provide dollar estimates of the new services required as the result of economic development. The cost of providing new services will vary so much from one community to another that it would have been misleading to even suggest certain ballpark estimates for some of the costs involved. It is expected that the governmental agencies in charge of providing the various services in a community would be in a position to give interested citizens reasonable estimates of the cost in

that particular community of providing the various services discussed above. The important point to remember is that once the local governmental agency has estimated the cost of providing new services, the principle of marginal cost pricing and quality of service should be applied to these cost estimates to determine what part of the cost can be associated with the economic development of a community.

B. Additional Tax Revenues Generated by Economic Development

As was stated above, the question is not so much one of how much tax revenues will be generated by economic development but the central question is who will pay the taxes that are generated. That is, the increase in service demands will have to be paid for and the central question is who will pay for the services. In the previous section, we determined the cost of new services that can be attributed exclusively to the economic development resulting from the location of a new firm in a community and the new families associated with the new firm. In this section we will attempt to identify the new revenues generated from those who benefited from the economic development. Before doing that, however, two ideas will be introduced that must be kept in mind when attempting to determine who will pay the taxes required to provide the new service.

The institutional arrangements (revenue sources) used by local government will determine in large part who pays the new taxes. For example, there are three institutional arrangements often used to finance the extension of public services such as water and sewer. One of these institutional arrangements is to float what is called revenue bonds to raise the money for capital construction. The essence of revenue bonds is that the bonds are to be redeemed by revenues collected from the water or sewer authority. A second method of financing public service construction cost is to float tax bonds. These bonds are repaid from the tax receipts of the governmental unit involved. A third method of financing construction of public services is also to float a bond issue that is based on taxes, but the taxes are levied only against those who will benefit from the service provided instead of on all taxpayers in the local governmental unit. If a new water system is required to open up a new area for urban development, the land owners in the new area will have a special assessment against their properties and the existing residents of the community will not receive any special tax assessments. If revenue bonds are used to finance the construction of public services, then it is reasonable to expect that the existing users in the system will pay part of the cost of extending the service to new customers. Also, if tax bonds are used to finance the extension of a public service system, then the cost of the new system is paid for by all of the taxpayers in the community rather than all of the users of the public service system. On the other hand, if the special tax assessment is used, then the cost of extending the system falls largely upon the users who will eventually benefit from that system. It is very important to keep in mind the types of institutional arrangements used to finance various services for two reasons. First, the institutional arrangements utilized do affect who will pay for the new services. Secondly, the institutional arrangements should not be taken as given by a community which is attempting to reach a decision on whether or not to allow a type of economic development to take place. The community can indicate that it will allow a certain type of economic development to take place only if the method used to finance the new services is one that will require the new plant and new families to pay for the services.

Also, it is important to take into account the indirect effect of various taxes. The individual who pays the tax to the local governmental agency may not be the one who actually pays the tax. The person paying the tax may pass along the tax to someone else. For example, an apartment building owner pays the property taxes on his apartment building but the owner presumably passes along these taxes to the residents of the apartment building. The incidence (who pays) of various types of taxes is an extremely complex matter. In the context of fiscal impacts, care must be taken to correctly estimate the true incidence of a particular tax. With these two thoughts in mind, let us now examine the change in revenues from each of the sources listed in Table 1 resulting from the plant locating in a community. Again, the list of revenue sources in Table 1 provides a good starting point.

1. Real Estate Tax: The most obvious change would be the taxes paid by the new plant and the new families in the community. However, care must be exercised here to take account of the institutional arrangements. For example, it is often the case that the community owns the building in which the new plant is located and under such an arrangement there will be no tax revenues generated by the new plant. Or, in some cases, the new plant is given a tax-exempt status for a certain period of time. The amount of real estate taxes generated by the families in a community will depend upon the type of housing they select. For example, if the new families rent houses that were previously vacant, then the amount of real estate tax forthcoming from these houses will not change but now the new families are, in effect, paying the tax instead of the owners of the house. If the new families all construct new homes, then the tax revenue generated from the new homes above and beyond what was being previously generated by the property should be credited to the revenues generated by the new residents.

2. Occupation Tax: If a substantial number of the employees in the new plant were previously unemployed, then presumably the occupation tax paid by these people can be credited to the economic development in the community.

3. Per Capita Tax: The per capita taxes paid by new residents in the community should also be credited to the economic development.

4. Income Tax: Few local communities have income taxes but to the extent that they do exist, the changes in income taxes collected from the residents of the community should be credited to the economic development. If a substantial number of the plant were previously unemployed, then the increase in income tax revenues could be substantial.

5. Property Transfer Tax: Again, if the new residents in the community purchase homes, then the property transfer tax paid on these transfers could be significant.

6. Sales Tax: The extent to which the additional income generated by economic development creates additional sales tax revenues, this revenue should be credited to the economic development that takes place in the community.

7. License Fees: The license fees paid by the new residents in the community should be credited to the new economic development of a community.

8. Fines: Fines paid by the new residents in the community should also be counted as part of the revenue generated by economic development.

9. Grants: The impact of economic development on the grants received by the local government can be either positive or negative. For example, the local community may have had substantial unemployment before the new plant came in and was therefore eligible for certain types of state and federal grants. If the new plant reduces unemployment to a level that the community is no longer eligible for these grants, then the impact of economic development on revenues is negative. On the other hand, if economic development of the community is sufficient to stimulate the level of economic activity in the region such that the tax effort by the community is increased, then that community may receive more grants under the federal revenue sharing program. Again, if the impact of economic development on a community is substantial, then the economic development may alter the grants being received by the local community.

10. Users' Fees: The new users' fees collected should be credited to the economic development.

The exercise of going through this list of taxes and making honest attempts to evaluate the incidence of the change in revenues from each of the taxes will provide a reasonably good estimate of the impact of economic development on the revenues received by the local government. Even though some of the estimates will have to be rough, the major reason for mistakes would be not considering one of the sources of revenues or failure to identify the person that actually pays the tax.

III. CONCLUSIONS

It has been the attempt of this paper to provide a general checklist of the types of services provided by and the sources of revenue available to local communities. It is impossible to provide precise estimates of the cost of new services provided or of the types of revenues that would be generated as a result of economic development. This is impossible because of the unique nature of communities, the excess capacity existing in the various services, the institutional arrangements used to generate the revenues for local government, and the economic impact of a new plant locating in a community. However, it is believed that considering each item on the above list, taking care to deal with the marginal cost and change in quality of service, as well as with the types of taxes and the incidence of these taxes, should provide an adequate estimate of the fiscal impact of economic development on a community.

WHAT TOOLS ARE AVAILABLE FOR MAKING ECONOMIC GROWTH DECISIONS?

J. Dean Jansma

This paper emphasizes the importance of tools in making decisions. This, in turn, subsumes the measurement of impacts as one segment of the decision-making process.

I would argue, for example, that a tool can be a concept as well as an analytical technique. Also, decisions are based on political, sociological, and environmental considerations as well as economic. My approach will be an attempt to indicate some of the rules of the game when making economic growth decisions and some techniques which might be useful in playing the game.

In structuring my comments I would like to use the old journalistic technique of five W's and an H. Specifically, let us examine these concepts within the framework of why, what, how, when, where and who.

WHY

Start with the concept of why. We could start with a more academic (or at least seemingly more academic) approach and discuss goals, ends, etc., but, in fact, we are discussing why--why are we pursuing this particular goal. As simple as this seems, I think one of the problems associated with measuring various aspects of economic growth is the lack of a target. If there is no end point (goal) how do we measure progress toward the goal or, indeed, when we reach the goal? Thus, one of our approaches, and indirectly our tools, for measuring growth is the specification of goals in such a way as to permit measurement of progress toward the goal. For example, rather than criticizing economic growth because of its degrading impact on the quality of life, we need to indicate the specific attributes of the quality of life we wish to protect or improve. The renewal of interest in social indicators research is a step in the right direction toward being more specific in making decisions about the impact of growth and change on a community.[1]

J. Dean Jansma is Professor of Agricultural Economics, The Pennsylvania State University, University Park.

[1]One of the most ambitious programs of research in this area has been S. Sismondo's work with the Canadian NewStart Program. See, for example, his publication entitled Applications of Structural Indicators for the Measurement of Development: Selected Findings for Rural Communities in Kent County. Richibucto, New Brunswick, Canada: New Brunswick NewStart, Inc., Report No. R-73-120, 1973.

WHAT

Although one can argue with the proper sequence for discussing our W's and H, the next logical step seems to be to tackle the what concept-- what needs to be done. Inherent in this concept is what is the current status of the relationships in our unit of observation. We need a descriptive analysis--a data base--before we can move to an analysis of the impact of changes from this base.

Two quantitative techniques which have been useful in examining and describing communities are shift-share analysis and economic base studies. (Some would argue that economic base analysis is a predictive rather than a descriptive technique.) Both of these tools have been criticized by academicians and others, but I would argue that the fault lies in the misuse of the tools, not in the tools themselves. They are useful, "quick and dirty" type measures, for describing economic relationships within a community.

In order to describe some of the factors relating to changes in employment structure within a region, the shift-share technique can be used.[2]

Shift-share analysis is based on two factors which attempt to describe the growth patterns of a region.[3] The "industrial mix effect" measures the distribution of rapid and slow growth industries in the region. Each industry is characterized as slow or rapid growth by comparing the industry's growth rate to the growth rate of all industries over the same time period. The "regional share effect" measures whether the region's share of each industry is increasing or decreasing relative to other regions.

The data required for an employment shift-share analysis are employment figures by industrial sector for the overall economic system, such as the Nation, and comparable figures for the regions under analysis for two points in time. Given this data, percentage changes for each industrial sector in the time period are calculated for the system and the region.

Given the above percentage changes, three components of employment change are calculated. The first component, national growth, is calculated by multiplying the region's base-year employment figure for each industry sector by the Nation's overall growth rate. The resulting figure indicates employment growth in the region if each sector has grown at the same rate as the Nation's overall growth rate. For example, if the Nation's overall growth rate for the time period was 50 percent and the region had 100 employees in retail trade in the base year, then the region would have a na-

---

[2] The material on shift-share analysis is from a publication by Charles Kennard and Dennis Smith, A Base Book for Rural Development, Delaware State Ag. Exp. Sta., Pub. No. 409, December 1973. See this publication for a good example of how to implement the shift-share technique.

[3] Lowell D. Ashby, "The Geographical Redistribution of Employment," Survey of Current Business, Vol. 44, No. 10 (October 1964), pp. 13-20.

tional growth component in retail trade of 50.

The industrial mix component is calculated by multiplying the region's base year employment for each sector by the Nation's growth rate for the sector minus the Nation's overall growth rate. A positive component means the sector in the Nation is growing more rapidly than the Nation's overall growth rate and vice-versa. For example, if the growth in retail trade for the Nation was 80 percent, then the region's base year employment of 100 is multiplied by the difference between the Nation's growth rate in retail trade and the Nation's overall growth rate--i.e., 80-50 or 30 percent. This would result in an industrial mix component of 30 for the region in retail trade.

The regional share effect is calculated by multiplying the region's base year sector employment for each industrial sector by the region's growth rate for each sector minus the Nation's growth rate for the sector. A positive regional share effect indicates a shift of employment in the sector into a region and a negative regional share effect indicates a shift out of the region. For example, if the region's growth rate in retail trade was 90 percent, then the Nation's growth rate in retail trade--80 percent--is subtracted and the difference--10 percent--is multiplied by the region's retail trade employment of 100 for a regional share effect of 10.

A summation of the three components for each sector in the region will give the actual total employment change in the time period (retail trade had an increase of 90 employees in the above example). The summation of the industrial mix effect and the regional share effect results in the relative change for the sector in the region (the relative change for retail trade would be 40 in the above example). A positive relative change indicates that the region's sector grew more rapidly than the Nation's overall employment growth rate.

Because shift-share analysis has become a prominent tool for regional analysis, criticisms and limitations of the technique have been discussed. Houston discusses the theoretical and empirical limitations of shift-share analysis.[4] First, he notes that the industrial mix effect and the regional share effect offer no explanation of economic behavior. Second, it is implicitly assumed in the analysis that all of the sectors of a region face a national market. In reality, many sectors face only a local market so that national effects on demand may not be shared by the local sector. Third, different industry disaggregation procedures will result in different shift components and therefore give different results and interpretations.

In reply to Houston, Ashby argues that the shift-share technique is not a behavioral growth model that contains predictive capabilities.[5] It is unfair to criticize shift-share analysis as if it were a growth model be-

---

[4]David B. Houston, "The Shift and Share Analysis of Regional Growth: A Critique," Southern Economic Journal, Vol. 33 (April 1967), pp. 577-581.

[5]Lowell D. Ashby, "The Shift and Share Analysis: A Reply," Southern Economic Journal, Vol. 34 (January 1968), pp. 423-425.

cause, in fact, it is only a descriptive model.

The criticisms lead to two important limitations of shift-share analysis. First, the technique is a descriptive device and was not designed to be a predictive model. Second, the analysis is concerned with changes in employment and cannot evaluate the effect on changes in unemployment. Curtis concludes the following:

> . . . most arguments in favor of the technique point out that it should be used merely as a descriptive tool and should not be used to explain the ultimate causes for changes in key growth variables . . . shift-share analysis permits an orderly assessment of the industrial changes occurring in an area. It appears to offer a comprehensive and direct tool for relating regional . . . to national growth . . . .[6]

The rather detailed examination of shift-share analysis indicates that a relatively simple technique with minimal data requirements can provide a significant amount of information on the employment structure of a region.[7]

Another useful descriptive technique is economic base analysis--which is also known as export base analysis. The conceptual basis for this technique is the assumption that a region's growth depends on the rate at which the exports of the region expand. An increase in exports will, in turn, stimulate non-export or service activities through a multiplier process.

The basic approach used in economic base analysis is to divide the employment activities in a region into two groups. One group includes the number of basic employees which are producing for export demand. The non-basic or service employees, allocated to group two, are those providing the non-export goods and services in the region. The ratio of the number of non-basic to basic employees becomes the economic base multiplier.

For example, under the assumption method we consider the employees engaged in agriculture, mining, and manufacturing as being basic employees and all others as non-basic. Assume a region has 2,000 employees with 800 of them allocated to the basic group (i.e., engaged in agriculture, mining and manufacturing) and the remaining 1,200 in other, non-basic type activities. Our multiplier would then be 1200/800 or 1.5. We would then conclude that 50 new jobs in manufacturing would stimulate an increase of 75 in non-basic employment. This, of course, becomes very important when attempting to

---

[6] Wayne C. Curtis, "Shift-Share Analysis as a Technique in Rural Development Research," American Journal of Agricultural Economics, Vol. 54, No. 2 (May 1972), p. 270.

[7] For a report showing how shift-share can be combined with other descriptive techniques see Dennis Smith and Dean Jansma, A Prelude to Rural Development in Pennsylvania, Pa. Ag. Exp. Sta. Bul. No. 784, February 1973. Also see the classic work by Harvey Perloff, et al., entitled Regions, Resources and Economic Growth. (Lincoln: University of Nebraska Press, 1960).

measure the impact of economic growth in a region.

The size of the multiplier is directly related to the procedure used in assigning employees to basic or non-basic employment. For example, in a university town one of the basic activities is education but, under the assumption method, employees in the educational field would normally be assigned to the nonbasic group. This would tend to overinflate the multiplier computed for this type of community. To partially correct this problem, a location quotient technique has been used to improve the allocation process. In general, it is computed as follows:

$$\frac{\text{number of employees in State (or Nation) in industry } j}{\text{total number of employees in State (or Nation)}} = \frac{X}{\text{total number of employees in region i (county or State)}}$$

For example, assume one wishes to develop an economic base study for a county within a state (if developing a study for a state one may wish to use national or regional data). One determines (perhaps from census data) that there are 1,000 employees in the state in industry j (normally the economic activity in a region is delineated into 10-30 industrial classes). Further he finds total employment in the state is 100,000. Thus, we find that 0.01 or 1 percent of the total state employment is in industry j. Returning to our data source, we determine that the number of employees in region i (county) is 6,000. Multiply 6,000 by 0.01 to determine the number of employees in region i that will be assigned to nonbasic employment. In this case we would assume that 60 employees (0.01 times 6,000) in region i are supplying the local needs for the goods and services. If our basic data source (say the census) indicates there are actually 240 people employed in industry j in region i then we assume that 180 employees (240-60) can be assigned to basic employment. That is, we assume that these 180 people are producing for export from region i. A similar computation is performed for each industry class and the results are then summed to determine the nonbasic/basic ratio.

There are still major conceptual problems with this approach. For example, there are assumptions of constant coefficients, equal productivity, location linkages, import substitution and correlation with size of region.[8] I would argue, as with shift-share analysis, that even with its faults the economic base approach is a useful tool for measuring the impacts of growth. It is an unsophisticated measurement tool, but it is easy to compute with data that is generally available.[9] Yet, it is an important "rough" measure of the impact of economic growth in a region.

---

[8] For a good discussion of the uses and abuses of economic base analysis, including the problems inherent in these assumptions, see Charles M. Tiebout, The Community Economic Base Study, Sup. Paper No. 16, (New York: The Committee for Economic Development, 1962).

[9] It is surprising how many townships and boroughs pay anywhere from $3,000 to $10,000 to a consulting firm to supply them with an economic base study. The true cost is a few hours of time and some census volumes.

HOW

In the previous two sections we have discussed the question of why we do something (goals) and what is the need (descriptive analysis). Now we face the question of how to choose between alternative courses of action. This question really has two major aspects--efficiency measures for selection of alternatives and distributional impacts resulting from the choices made. The efficiency aspects will be discussed in this section--with emphasis on benefit-cost analysis. (The discount rate and internal rate of return will be examined in the next section.)

The economic decision-making process used in allocating our scarce resources for development follows the basic principles of micro-economics. But there is a major difference. Many resource use decisions are made in the public sector and thus are not subjected to the same forces as those inherent in the market mechanisms which operate in the private sector. It is necessary, therefore, to develop a system of rules for allocating our scarce resources outside the market system, but within a framework of efficient use.

This system of rules, it should be emphasized, is not necessarily based wholly on economic considerations. Through our entire history, many of our resource use decisions--perhaps wisely--have been based on non-economic criteria.[10] But we would stress that economic criteria do provide one measure for comparing the benefits and costs of alternative resource use plans.

Thus, the economist tends to use price, or a proxy for price, as a major component in the decision-making process. The reason is that price becomes one standard for measuring the relative "trade-offs" between alternative uses.

The question which remains is how do we evaluate the amount of funds which should be used for these purposes. The ghetto mother with children who are hungry might place quite a different value on scenery, beauty, and other amenities than does the upper-income member of society who likes and can afford to commune with nature. Thus, there is a need for some standard where the "votes" from all segments of society can be registered.

Again, we would emphasize that society's decision-making criteria do not necessarily need to be based on an economically-oriented standard. Historically, the Congress has used a system of hearings to arrive at rational decisions. The emphasis in hearings was on rhetoric--which side could "tell the best story" or "who had the best lobbyist group." This is not meant to infer that hearings do not serve as an important vehicle for presenting opposing viewpoints or showing the many implications of a particular decision. But hearings do have a major shortcoming in terms of providing an objective

---

[10] The astronaut John Glenn supposedly said that one of the things he thought about before blast-off was that all the parts in his space craft had been supplied by the lowest bidder.

framework for decision making.[11]

The following example, reported in the Congressional Record in the early 1900's, indicates an extreme use of rhetoric to support a given project. This resource decision involves the remarks of a Congressman interested in getting a federally supported fish hatchery in Tupelo, Mississippi. The Congressman argued:

> Tupelo is very near, if not exactly in the center of the world, the horizon seems about the same distance in every direction. We have an ideal place for a fish hatchery. Fish will travel over land for miles to get into the water here at Tupelo. Thousands and millions of unborn fish are clamoring to Congress today for an opportunity to be hatched there at the Tupelo hatchery.

Tupelo got its hatchery. I admit this is perhaps an extreme example--but it does indicate the emotion-laden rhetoric which is sometimes used in the decision-making process.[12]

Another example, of more recent vintage, is also from Mississippi.[13] In the 1960's, the Booga Bottum Sky Barn, Inc. of Alligator, Mississippi received $16,500 from the Economic Development Administration to study the feasibility of a proposed service center for air travel at Huspenaka, Mississippi. One might tend to question the validity of this expenditure of federal funds, but do we know anything about the proposal? Even the names involved might tend to hurt (or enhance) what could be a high priority project. The role of the economist is to provide <u>one</u> standard for comparing the desirability of this project versus some alternative project.

<u>Introduction of the Benefit-Cost Idea</u>

In historical perspective, the concept of introducing benefit-cost analysis into resource decision-making can generally be traced to the Flood Control Act of 1936. Section 24 of that legislation is the source of the

---

[11] Maass would tend to disagree with this position. He indicates the hearing system provides an adequate basis for decision-making and supports his position by indicating major legislation such as the interstate highway system and public housing have been passed without an economic analysis. He further argues that subjecting water resources development projects to economic scrutiny tends to put such developments at a disadvantage. See A. Maass, "Benefit-Cost Analysis: Its Relevance to Public Investment Decisions" in <u>Water Research</u>, ed. by Aileen V. Kneese and Stephen C. Smith (Washington, D.C.: Resources For the Future, Inc., 1966), pp. 311-327.

[12] Examples of the "extreme use" of economics are also available, but we would argue that economics provides a more objective framework for judging how extreme some statements are in support or against a particular policy.

[13] We are not "picking on" Mississippi; it just seems that Mississippians are more creative in choosing names for organizations and places.

requirement calling for a comparison of "the benefits to whomsoever they may occur with estimated costs."

In 1939, under the auspices of the National Planning Board, the agencies with major inputs in the resource development field were brought together to compare notes on procedures for identifying benefits and costs. The Flood Control Act of 1944 explicitly stated the need for coordination of economic evaluation techniques. The different agencies and commissions had by this time each developed their own unique procedures which resulted in mass confusion. In order to bring some degree of comparability to the procedures used by the various agencies, a Subcommittee on Benefits and Costs of the Federal Inter-Agency River Basin Committee was established in 1946. The objective of the Subcommittee was to formulate "mutually acceptable principles and procedures for determining benefits and costs for water resources projects." The results of the deliberations of the Subcommittee were published in May 1950 as Proposed Practices for Economic Analysis of River Basin Projects.[14] One of the four basic principles indicated in this document provides the basic framework for benefit-cost analysis.

The principle in "The Green Book" requires, in effect, that net benefits from a project should be maximized. It requires that economic resources should be used in designing a project, "in such a way that the amount by which benefits exceed costs is at a maximum rather than in such a way as to produce a maximum benefit-cost ratio or on some other basis." This principle requires that a project should be developed, in terms of size, to the point where the net benefits rather than the benefit-cost ratio is maximized. This is in accordance with economic efficiency, if we assume unlimited capital availability. We will discuss the technique of benefit-cost analysis under this assumption and then see what happens when we relax this assumption.

Technique of Benefit-Cost Analysis

Benefit-cost analysis is simply an economic technique for comparing the benefits and cost resulting from changes in scale in the design of a potential project. More importantly, it is the application of basic economic principles to problems of resource allocation. Thus, it is not a grandiose technique developed just for this purpose, but rather an application (with slight modifications in terminology) of basic economic principles.

Perhaps an example provides the best introduction to this technique and how it is useful in decision-making situations. Assume, for example, that the empirically measured costs and benefits from a specific project are as shown in Table 1. In this example, as the scale of development increases, there are increases (as expected) in the magnitude of the total benefits and costs.

---

[14] Because of its rather unwieldly title, this report and subsequent revisions are by convention listed in the literature as "The Green Book." This has been subsequently revised and extended by A-47, Senate Document 97 and, most recently, by the Water Resources Council's proposed standards.

Table 1
Total Benefits and Costs Associated With
Varying Scales of Development

Scale (X)	Total Benefits (Y_b)* ($000)	Total Costs (Y_c)* ($000)
0	0	10
1	19	12
2	36	16
3	51	22
4	64	30
5	75	40
6	84	52
7	91	66
8	96	82
9	99	100
10	100	120

*The total benefits function is based on equation $Y = 20X - X^2$ and the total cost function on equation $Y_c = 10 + X + X^2$.

The question which now arises is what scale of project would maximize the economic use of our scarce resources. Returning to basic economic principles, we find the emphasis is on comparing marginal benefits (revenue) and marginal cost when seeking an economic optimum. Thus, in Figure 1b, the data for our hypothetical project is examined in terms of these marginal magnitudes.

The marginal benefits and marginal costs (from Table 2) are plotted in Figure 1b with the intersection of these points slightly less than five units in terms of scale. At this point, the incremental costs resulting from a larger project is just equal to the incremental benefits which the project will provide. Also notice in Table 2 (column 6) that the difference between total benefits and total costs is at a maximum at a scale of about

Table 2
Marginal Benefits and Costs Associated With Varying Scales of Development

Scale	Total Benefits	Total Costs	Marginal Benefits*	Marginal Cost*	Total Benefits Minus Total Costs	Total Benefits Divided by Total Costs	Marginal Benefits Divided by Marginal Costs
0	0	10	19	2	-10	0	9.50
1	19	12	17	4	7	1.58	4.25
2	36	16	15	6	20	2.25	2.50
3	51	22	13	8	29	2.32	1.62
4	64	30	11	10	34	2.13	1.10
5	75	40	9	12	35	1.88	0.75
6	84	52	7	14	32	1.62	0.50
7	91	66	5	16	25	1.38	0.31
8	96	82	3	18	14	1.17	0.17
9	99	100	1	20	1	0.99	0.05
10	100	120	-1	22	-20	0.83	-0.05

* These are average marginal measures of costs and benefits. Point estimates can be calculated by the total curves. In our example the marginal benefit function is $y'_b = 20 - 2X$ and the marginal cost function is $y'_c = 1 + 2X$.

Figure 1a. Comparison of Total Benefits and Total Costs

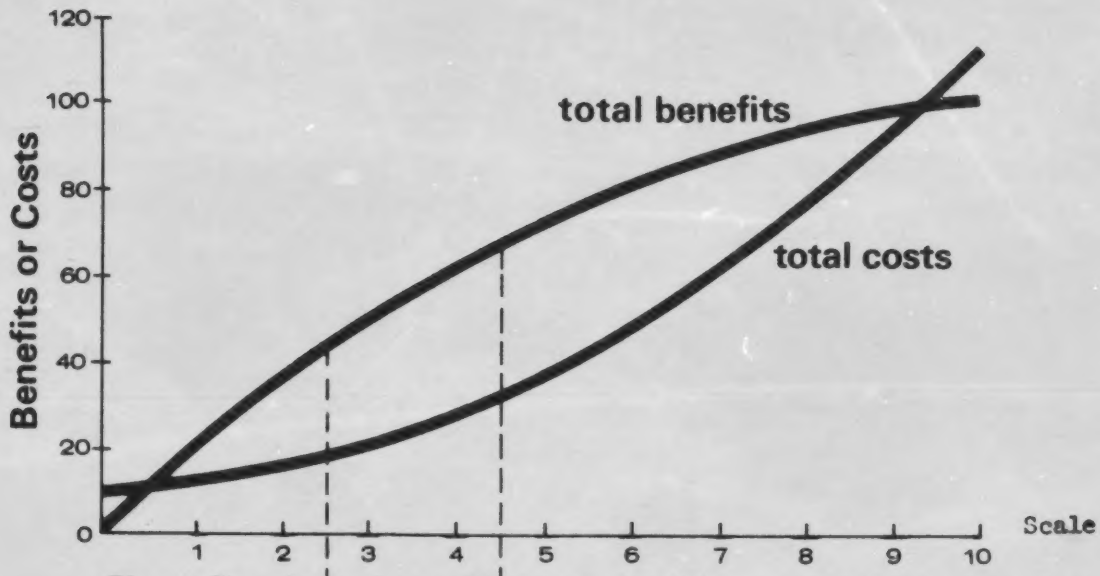


Figure 1b. Comparison of Marginal Benefits and Costs

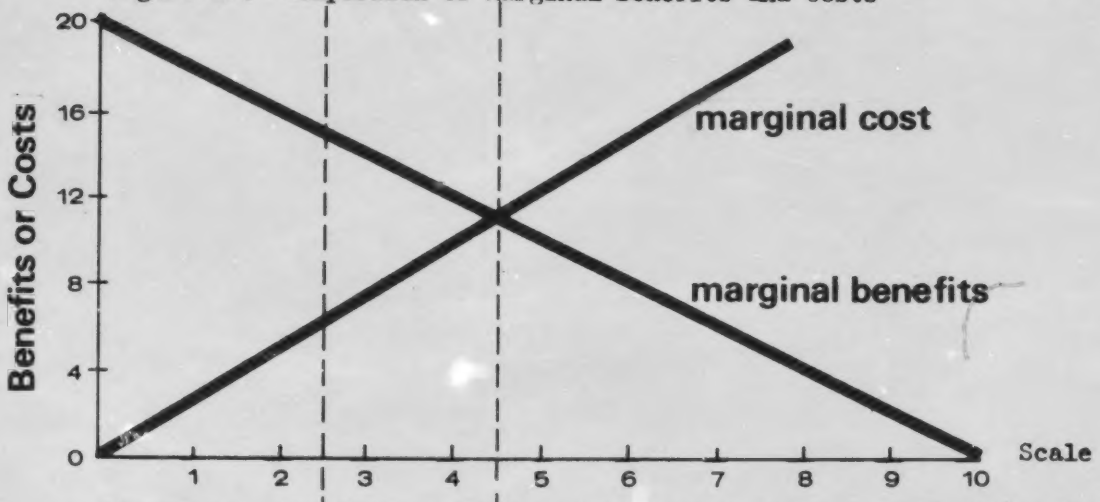
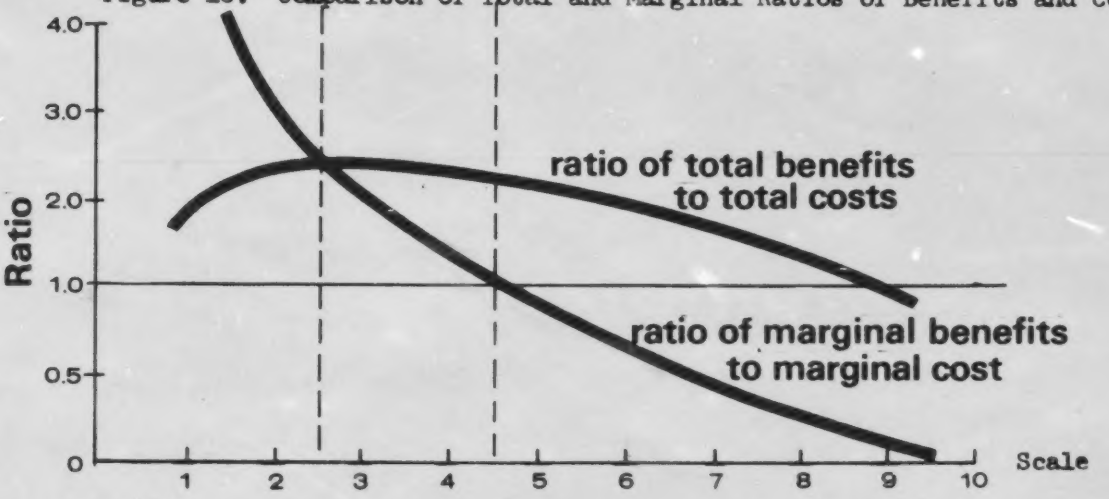


Figure 1c. Comparison of Total and Marginal Ratios of Benefits and Costs



five units.[15] Thus, the basic economic principle of equating marginal costs with marginal benefits agrees with "The Green Book" principle that the scale of a project should be at the point where the excess of total benefits over total cost is at a maximum.

It is important to reiterate that under our assumption of unlimited capital at the given discount rate, the scale of development associated with an economic efficient use of resource is not the point where the benefit-cost ratio is the greatest. The reason for this seeming inconsistency is that the benefit-cost ratio is an average measure based on the relationship between total benefits and total costs, whereas the relevant economic measure is the marginal relationship between inputs and outputs. As shown in Figure 1c, the maximum benefit-cost ratio is at about 2.75 units, whereas the ratio of marginal benefits to cost is equal to unity at the above determined scale of 4.75 units.

In this section we have introduced the technique known as benefit-cost analysis. A major purpose was to reinforce the idea that this technique is just an application of basic economic principles to practical problems of resource allocation. This does not mean, however, that the benefit-cost technique is not a valuable tool or that there are not important problems (and areas of professional disagreements) on how we measure the benefits and costs in implementing this technique.

To this point, the assumption of unlimited capital at the given discount rate was employed. Many would argue this is unrealistic and we should emphasize highest return per dollar invested which normally would be to the left (i.e., smaller scale) rather than the MC = MB (Marginal Cost = Marginal Benefit) point. My view is that both points have legitimacy and are correct as long as we make our assumptions explicit. More important in my opinion (and less frequently discussed) is the tendency to operate to the point where the B/C ratio equals one. In general, there tends to be overbuilding

---

[15] Solving equations for the two functions, we find the point where the marginal benefits equals the marginal costs is at a scale of 4.75 units. This is also the point where the total benefits exceed total cost by a maximum amount. Empirically, we find the former by equating the marginal cost and marginal benefit function as follows:

$$20 - 2x = 1 + 2X$$
$$4x = 19$$
$$x = 4.75$$

Then, we determine maximum net benefit by subtracting the total cost function from the total benefit function and solve the maximum net benefit as follows:

$$\text{Net Benefits} = (20X - X^2) - (10 + X + X^2)$$
$$NB = -10 + 19X - 2X^2$$

Then, maximize NB function

$$\frac{dNB}{dx} = 19 - 4X = 0$$

$$4X = 19$$
$$X = 4.75$$

of projects in terms of size.[16]

To sum up the technique of benefit-cost analysis, the important point is it is merely an application of a basic economic efficiency model to resource allocation.

WHEN

One of the more important considerations in benefit-cost analysis is the concept of time. In terms of manipulation of the data, it is necessary to compare cost (which normally occurs at one point in time) with the benefits (which normally represent a stream of income over time). In making this comparison we can amortize the cost over time or capitalize the time stream of benefits to provide a comparable present value of both the benefits and costs. Probably more space in the benefit-cost literature has been devoted to the discount rate problem than any other problem. We do not have the time or space to develop these arguments here. It was mentioned to indicate the importance of time (and risk over time) in measuring impacts. Thus, the when problem is of major importance in solving resource allocation problems. In practical terms, what is the consequence of acting now versus waiting to act in the future? Conversely, it is also important to consider the opportunities foregone by delaying action.[17] In summary, one of the important variables in this decision process is the "price" and "risk" we assign to using our scarce capital resources.

WHERE AND WHO

To this point in our discussion the emphasis has been on descriptive analysis and economic efficiency considerations. In this section, we will briefly examine some distributional considerations-- who will be affected by the proposed action and where the action will take place. In general, it seems the economics profession has done a fairly good job of developing and evaluating the "trade-offs" as they relate to economic efficiency. But we have done less well in tackling the distributional question. We are too ready to retreat behind the "economics is concerned with efficiency" shield and thus miss the mark in many of the problems associated with growth. At a minimum, it seems we have a responsibility to point out the probable economic impact of alternative distributional trade-offs. If anyone except (including?) other economists is going to listen to us, it seems imperative that we enter this less stable ground.

---

[16] One of the reasons for the tendency to overbuild is that consulting fees, architectural services, etc. are based on a percentage of the total project cost.

[17] For a programmed learning approach to benefit-cost analysis and related problems (such as internal rate of return) see the mimeographed publication prepared by Phillips W. Foster and Alfred Thieme entitled Exercises in Project Analysis, Department of Agricultural and Resource Economics, University of Maryland, 1972.

James Kunen, a brilliant young writer, expressed his somewhat unorthodox view of the distribution problem after the recent Apollo moon landing.

> The really fine aspect of the trip, as we all know, was that it brought all humanity together. . . but it's not true. Maybe for ten minutes it did; 20 minutes tops. But in the long run, the only thing we all do together moonwise is chip in for the ticket.
>
> And the money is needed for the cities, yes. And to soar to the moon over the faces of starving people is an obscenity, yes. But Americans are reluctant to back programs which will aid some people at the expense of others. The moonshot aided no one at everyone's expense, and was thus equitable and perfectly all right.[18]

Now, one may well disagree with his evaluation of the worth of the Apollo program, but it is hard to argue the realities of his last sentence. We are concerned, rightly, about the "windfalls" others might receive. Yet we seemingly have little concern about not facing the hard distributional impacts when measuring the impacts of economic growth.

Spatial Distribution Trade-Offs

A great deal is yet unknown about the impact of growth programs on the spatial arrangement of economic activities. Will Pennsylvania's rather stringent "Clean Streams Law" drive industry to neighboring states with less demanding standards? Solid evidence is not yet available to support the contention that this is happening in Pennsylvania. Conversely, some of the western states are actively promoting programs designed to limit, in the name of environmental quality, the influx of economic activity. The Governor of Oregon is closing his speeches to visiting firemen with "come and visit us, but please don't stay."

In this regard, one wonders about the usefulness of another of our economic constructs as it is currently being used. Specifically, one sees the "economies of size" concept used to show cost-size relationships without adjusting for quality. For example, consider the cost of municipal sewage systems for towns and cities with various size populations. The results of Downing's study show the traditional decreasing average cost curve for similar treatment levels as city size increases. But what is normally not taken into account is that higher levels of effluent treatment are needed in the larger cities to attain the same water quality in a given stream. In a recent study at Penn State, we found that the "economies of size" advantages for the larger cities tended to be offset by the higher levels of treatment required to meet specified stream standards. Thus, the economies of size argument often used as a benefit of growth might be more illusory than factual.

The "economies of size" concept also tends to affect questions of the

---

[18] James S. Kunen, "Moon Landing was Thrilling Job of Animation," Washington Post, August 24, 1969, p. B2.

"optimum" spatial distribution of population. Thompson, and more recently Hansen, have contended that cities of 200,000 to 250,000 provide the minimum critical size for providing self-generating and viable economic growth.

If this be true, one is forced to ask two related questions: (1) why are the mayors of our large cities predicting doom and disaster without federal revenue sharing; and (2) why undermine the vitality of these "self-generating and viable" areas with federal subsidies that have not been needed in the past.[19] The size problem is only one component of an admittedly much broader problem, but one wonders if part of the "crisis" is not the wider divergence between private and social cost in the larger metropolitan areas.[20]

Sector Distributional Trade-Offs

A question of importance in terms of both efficiency and distribution is which sector should carry the cost of growth and which reaps the benefits of growth. I am convinced that one of the largest obstacles to action is the lack of a clear understanding of the incidence of cost and benefits of alternative programs. It should also be noted, however, that the distributional "fairness" associated with each sector being rewarded a proportional gain from some action might be very costly from the standpoint of efficiency in resource use.

Distribution of Income Trade-Offs

It is indeed difficult to speculate on the impact of growth on the distribution of income unless one is examining a specific proposal. One can, however, make some general observations.

A general examination of the composition of most economic development organizations indicates a preponderance of people from three segments of the community. Roughly defined, these include representatives from: (1) the Chamber of Commerce, (2) local government officials, and (3) decreasing-cost industries.

The Chamber of Commerce representatives are interested in growth for many reasons. They are interested in the good of the community, but this is not exclusive of their interest in the fact that if we can get higher total employment in our community, we are going to sell more goods and services. The Chamber representatives generally want to generate more economic activity because they are selling products to the public. Thus, the Chamber is one interest group (including the local bankers) which tends to be pushing for growth in rural communities.

---

[19] This point is made by Alan Bird in his review of Hansen's book in Agricultural Economics Research, Vol. 23, No. 2, (April 1971).

[20] Although I think this is an important point to consider, it should be noted that perhaps the most serious problem facing the large city is the unequitable distribution of the tax load between the suburbs and the central city.

A second group is the local government officials. They are basically charged with representing all segments of the local community and they are concerned about providing jobs and community services. But they also tend to have a vested interest in "moving up the scale" from say a fifth class, to a fourth class, to a third class county. Even in terms of the numbering game, most people would prefer to be second class than to be third class. The larger the group, the more prestigious in terms of political power.

Finally, you have a third group which we call the decreasing-cost industries. I have defined decreasing-cost industries as the kind of industry where the adding of one more service unit or one more product is not as costly as the one that came before. Perhaps the classic example here is in newspaper production. Assume you are operating the local newspaper. Once the linotype (or other process) is set up and the printing press is running, the extra cost of running off another newspaper is very low. It does not cost much to run off the 1,501st newspaper if your normal production run is 1,500 papers. If you can attract more families to move into your community, you have two things going for you. First, you increase circulation and sell more papers. Second, the ad revenues are closely related to the circulation level of the paper. Thus, you have a special interest in increasing the total number of families in the community. The basic logic holds for radio and television stations.

Normally, public utilities (electric, telephone, etc.) tend to be decreasing cost industries. The adding of one more service unit, once they have the basic structure of the utility, tends to be very inexpensive.

In most communities, the proponent of growth is also involved in promoting self-interest. Conversely, the poor, elderly and similar groups are usually not well organized and are not actively involved in decisions regarding growth. This is natural, but should be recognized by those charged with planning for all citizens of the community.

Intergenerational Distribution Trade-Offs

Another interesting distributional trade-off is -- how do we express our concern for future generations? Are we using up their birthright through riotous living which will result in a plundered planet? Or does the appeal for protecting the needs of future generations provide an unimpeachable reason for irrational action?

The idea that society must speak for the "unborn generations" is not a new idea. One of the central themes of the whole conservation movement is the selfishness of man and the need for society "to protect the rights of our children and grandchildren." The problem with this approach is that it establishes a uniform cause for preventing growth rather than finding the specific reasons for stopping or encouraging growth. This labels any growth as "anti-social," and thus provides no guidelines as to the appropriate level of action.

SUMMARY

My assignment was to discuss some of the tools which support the decision-making process as they relate to economic growth. The framework used for discussing these impacts is to look at the why, what, how, when, where and who questions associated with growth.

A final word of caution about using any of the tools. First, the tool used should be the appropriate one. We cannot use a descriptive tool and expect to attain prescriptive results. Second, just because one can "generate numbers" by using these tools, one should always recognize the assumptions underlying the interpretation of these numbers. The mechanistic application of a technique without thinking-- or the lack of plain old "common sense"-- is worse than not doing anything.

INFORMATION PROBLEMS IN ASSESSING THE IMPACTS OF ECONOMIC DEVELOPMENT

John R. Fernstrom

It is assumed that the purpose of our endeavor in these collected papers is to provide communities with the kind of information they can use to make the difficult choices they face when considering economic growth policies and strategies.

When the community and the businessman make decisions about the location and impact of any kind of economic activity upon a community, some factors are predictable, some are not. This applies across the board, regardless of whether we are attempting to determine the economic, the ecological, the sociological, the political, or the fiscal implications of growth, taking these implications separately or intertwined.

The growth issue is beset with controversy, complexity and ignorance. The question is -- must conflict always be involved or can we demonstrate sufficient resolve and ingenuity to reconcile the large areas of doubt and uncertainty?

When we talk about the impact of economic growth, much of what we know is of a speculative nature concerning the complex interplay of the many growth factors that can be involved. Empirically, we know all too little about this interplay. When we try to assist groups making decision, we constantly run into the unknown or unknowable. In attempting to determine causal relationships, assess the trade-offs, and come up with a measured cost-benefit balance between economic growth and the world around us, we run into the unmeasured or unmeasurable.

It is not surprising, then, that much of our knowledge and much of our evidence is fragmentary and inconclusive and the results produce conflicts. Some results are even wrong, unintentionally or intentionally, depending upon the bias that may have been built into our observations.

Conceptually, we are able to discern implications and we understand the processes of economics, ecology, sociology, and politics that all have bearing upon the impact that economic growth may produce.

We are aware of the benefits and some of the dangerous implications of economic growth and of the methods of containing the undesirable products of growth. We can specify the directions for changes in priorities and

---

John R. Fernstrom is Program Leader, Economic Development, Community Resource Development Staff, Extension Service, U.S. Department of Agriculture, Washington, D.C.

p. 74 blank

institutions to put known methods to work for desired change. However, with all our uncertainties, we must present with certainty our deliberations to a community for decision-making. If we are to do this successfully, we must understand one other point that has not been considered in the other papers. Related to our impact work with communities, there are serious questions concerning the nature of public knowledge about economic growth and an understanding of what the community thinks as a group.

Anyone in our society whose eyesight and hearing are not totally impaired is likely to believe that economic growth and environment are on a collision course with doomsday, not to mention the potential for social, political, and fiscal collisions. The raising of the ecological and social conscience has produced no scarcity of rhetoric of crises. The compulsion of the media to turn each bit of bad news about economic growth into a full-blown crisis distorts the community perspective. The negative or pessimistic emphasis places the optimist in an awkward position, to say the least, and supports the contention that it is easier to obtain acceptance of pessimistic and cynical ideas than to give credit to human ingenuity for problem solving.

We have the problem at the community level of assembling impact information and then disseminating it in a manner that has meaning to the people in the community who will make the decisions. At the community level, in essence, we are engaged in predicting the impact of some form of economic activity on the economic base and on the social, political and physical environment. The long-range significance of the information that is provided community decision-makers puts the pressure on us to provide them the right kind of information so that there is full understanding of the interplay of the data and purposes, as well as the limitations, that are involved in determining growth impact. The collection of data raises basic questions. Who will collect the information? Where will it be collected? What information should be collected? How much should be collected? How does the information get interpreted? All this is in an atmosphere where there is no general agreement about what to measure to determine the impact of growth.

In the task of facilitating citizen involvement, decision-making and carrying out action, we must understand the concept of feasibility, including the various criteria which determine feasibility. Within the context of community decision-making, numerous ideas and schemes are offered as alternative solutions to identified community problems. These alternatives will have social, economic, political, fiscal and institutional implications, all of which must be analyzed.

Physical feasibility simply means "Can it be done?" With modern technology, a task, a project or structure can probably be built or accomplished. But the basis of this concept should stress the practicality of the feat. Although dams, buildings and roads are possible from an engineering and construction standpoint, they may not be considered the best solution from an environmental standpoint.

Economic feasibility in our system is one of the most important components of a proposal. A project may be physically possible, but if it is too costly in terms of time, money or other resources in relation to the expected return, then it probably is not economically feasible. In making

an economic feasibility study, several economic concepts are involved. These are opportunity costs, the benefit-cost ratio, and the proper use of money.

Political feasibility indicates that a proposal must be within existing legal boundaries or that a proposed action would be acceptable to the voters and/or legislators so that the plan or program could be implemented. The final test of political feasibility occurs in the community. It comes in the form of a referendum or a bond election where the public is asked to go into debt for the sake of a specific project.

Cultural feasibility is meeting the standards of criteria of a community or of the collected thoughts of the interest groups of that community. Often a practice, program or structure that is accepted on a state or national level is unacceptable to a local group. As an example, high rise apartments may be acceptable to state and area planners, lawmakers and the general public but still unacceptable in some towns.

Fiscal feasibility is a key consideration in tax policies and programs. To be a good source of revenue, administrative costs of a tax scheme must not exceed the income. Some actions may not produce the revenue expected or may be diluted by subsidies.

The information about impact and alternatives that we offer a community must include estimates of feasibility and appear to be rational -- a difficult feat in view of the often emotionally-charged setting in which growth-impact decisions are made. In light of the current state of the art of developing and presenting impact measuring techniques and the resultant "solutions" to the community, I would say that our greatest information problem is in today's most overworked word -- "credibility" -- and specifically the credibility of our output. The establishment of credibility is a product of understanding and trust. Many communication techniques are tried with varying degrees of success.

For example: The Governor of Arizona recently urged media representatives to assist in informing Arizonans about the importance of the tourist industry as it affects them, and stated that he believed an informed citizenry would react positively for the good of Arizona. He said Arizona visitors helped pay the taxes of Arizona residents and pointed out that 125,000 persons in the State are working in jobs related to tourism, meaning that one out of every five persons employed in nonagricultural jobs in Arizona is dependent in some way upon the tourist industry.

Tourists spent $690 million in Arizona in 1973, generating $70 million in direct State, city and county tax revenues, according to the Governor. And this did not include the $70 million in property taxes paid on facilities nor the millions of dollars of income taxes paid by tourist industry employees. But despite compelling facts, the Governor said that citizens are displaying bumper stickers telling visitors to go home, and urging an end to tourist promotion by the State.

Is this hostile reaction of Arizona citizens a response to lack of information? Or is it lack of credibility of the information provided to them? Or are other forces at work? One would immediately say that the Governor failed to mention the issue of tourism growth and Arizona's environ-

mental quality. In answer to this, the Arizona planning agency working with Battelle Memorial Institute has established a sophisticated computerized model to deal with the trade-offs between Arizona environment and economic growth. The system is called "The Arizona Environment and Economic Trade-Off Model" (ATOM). The need and premise for the development of ATOM has arisen because the protection, preservation, and improvement of environmental quality has become a pervasive public issue.

The overall objective of ATOM is to develop a conceptual framework and operational model capable of describing, in reasonable terms, the environmental impacts of economic and demographic change, as well as the overall results of policy decisions made for the State and related cities and subregions in Arizona. The model is also to serve as a tool for use by decision-makers in evaluating the trade-offs and relationships between potential economic development and environmental quality requirements. ATOM's developers report that not all questions concerning these relationships could be answered completely. Therefore, the model was constructed so that critical elements could be modified and updated as the state-of-the-art improves -- a limitation on the reliability of the model.

I think ATOM has a credibility problem. If limits are not precisely defined, how do we get a community to accept the results of a computer run? In fact, do people trust computers at all? The degree of predictability of the effects of planned development is clearly very important. The outcome of a complete regional strategy, based on an interrelated, but not necessarily complementary, system of measures with variable intensities is still largely a matter of intuitive judgment.

The impact of single projects can be assessed with somewhat greater accuracy. In California, for instance, an input-output analysis is being used to provide information to county supervisors making determinations on zoning and land-use changes. In one instance, the developer was denied a residential zoning, because the analysis showed the county would get a greater tax return if the acreage was retained in the production of wine grapes rather than devoted to residential use with the resulting increase in the cost of services that would be required. The results of the California work generally argue for the retention of land in agricultural use. Residential taxation rarely yields direct revenue in excess of services demanded. It might, however, be argued that income taxes and other revenues paid by new residents in a taxing jurisdiction might tip the scales in the other direction.

This brings us to the point that the results of an impact analysis are to a great extent more the product of the measurer than the measures involved. Let us go back to Frank Goode's example. If a new industry were to come into an area adding six new children to the school system, if the schools were not crowded, no new teachers were needed, no desks or books had to be obtained, the town's industrial developer might not see six new children as a cost impact upon the school system. However, if the average cost of education per child were $320, someone else doing the measuring might add that as an additional cost to the school system. Another person, who might consider out-migration as a solution to local economic problems, might add the cost of all of the children of local residents now working in the plant having children of school age. The question is where do we start? Where do we stop?

Sometimes, only the cost of a subsidy is measured against expected payroll or other developmental income. Some would suggest measurement against the subsidy plus the interest and income an alternative investment would create. This raises the question as to what are the alternatives and starts another chain of actions and reactions.

Another example that Dean Jansma referred to was, in assessing social costs, how do you measure whether it is better to put more housewives to work so children can eat and go to school but at the same time put unattended children on the streets while their mothers work, or vice versa?

All things can be relative when we think about the environment or ecological systems. For example, with respect to a stand of pine trees, a potential homebuyer may like trees, but a residential developer might think of a conifer stand as an intolerable fire danger. The town fathers might think of the additional costs for local fire protection if residences are built in dense stands of pine.

This raises another point. The techniques and the models and location theories developed until now tend to be better measures of impact after the fact. They tell us with more reliability how to discover if a mistake has been made rather than how to avoid mistakes. This does not mean that we give up. Their value, of course, lies in the expectation that study will produce a model that will have validity when applied to new situations.

The role of information use and misuse must be understood by the researcher. The analysis of the BASF controversy made by Wood and others at the University of South Carolina is a case in point.

An announcement in October 1969 by a West German chemical company (which goes by the initials of its corporate name - BASF) of plans to construct a petrochemical complex in Beaufort, South Carolina, touched off a national controversy. Many of South Carolina's State government officials and most of the poor people in the Beaufort area were in favor of the proposed investment, but a number of the developers and residents of the near-by Hilton Head Island resort area and conservationists from all over the nation opposed the idea.

In making the announcement of plans for the new plant, company officials said the investment in the facility would be approximately $100 million and that about 1,000 people would be employed. The United States Chamber of Commerce forecast the effect of the plant on the Beaufort economy as follows:

> . . . the influx of 1,000 employees in Beaufort will result in a population increase of 3,590, more than $3,000 more in personal (per capita) income; 30 more retail establishments; 1,000 more households; 970 more passenger car registrations; $3,310,000 more retail sales per year; 910 more school children; $2,290,000 more in bank deposits; and 650 more jobs over and above what the plant will employ.

A few days later, BASF officials announced that their long-range investment in the site might well be in the neighborhood of $400 million. In November, 1969, BASF purchased an 1,800-acre site. The company announced that the quality of the water of the river into which wastes would be dumped

would not be lowered. All wastes would be treated, both at the plant itself and at the existing water authority treatment facility, before being released. The South Carolina State Pollution Control Authority publicly expressed no concern that the new plant would violate state pollution laws. The Governor and State officials suggested that the plant would be a boon to the depressed economy of the area.

The controversy came out in the open in December, 1969, when the developers of Hilton Head Island claimed that, because of the loopholes in South Carolina pollution laws, the proposed chemical plant would pollute the river and pose a serious threat to the $100 million resort community on the island and to the local seafood industry.

Almost immediately, other individuals and groups began to oppose the construction of the BASF plant in Beaufort County, including then Secretary Hickel of the Interior Department. The controversy was "aired" in Life magazine before it was all over.

The aggressive campaign against BASF ultimately led to the cancellation by BASF of their plans to build the plant. The study by the University of South Carolina found that, from the economic standpoint, even if the BASF plant and its satellites had ruined the commercial fishing and the resort industry, the Beaufort area would have been "substantially better off" with the BASF installations than without them. In any case, the study did not anticipate such an extreme adverse result from the chemical complex.

Important questions are raised by the South Carolina case. Why, if BASF plants would have boosted the badly depressed economy of the area, and if most residents of the county apparently wanted the plant located there, was plant construction stopped and later abandoned? The answer, in part, was the public concern about pollution. Yet, it was never determined precisely what facilities would have been installed at the plant, what antipollution equipment was needed or planned, and what environmental effects, if any, the installation would have had on either the fishing industry or the development of the Hilton Head Island resorts.

The University of South Carolina study indicated that decisions were made by the individual parties in the dispute without all the necessary facts and with somewhat less than complete regard for the welfare of the other parties involved. At no time was there any suggestion of possible compromises or trade-offs. Yet some compromises and trade-offs are needed if we are to resolve the all too evident and frequent conflicts between economic progress and environmental quality.

On the other hand, the study pointed out, the Hilton Head Island developers were highly effective in stating and defending their position. Time after time, they referred to the size and potential future size of their resorts and the possible danger posed to them by location of the BASF plant. They played up the aid offered BASF by the state government and suggested the possibility of additional aid from the Federal Government. Resort officials filed suits against BASF in several courts attempting to enjoin plant construction. They also proposed to build a "7 Flags Over Hilton Head" amusement park on the plant site if BASF pulled out. Yet no one questioned the environmental impact of the amusement park that would

have brought thousands of daily visitors to the area. They hired a consulting firm to recommend an alternate plan for economic development of the area in the vicinity of Hilton Head Island that would be compatible with future development of the resorts. The plan suggested that cooperatives be organized to assist low income farmers in the area, the same people who were the "help" for the resort area's unskilled jobs.

The Hilton Head Island developers did a superb job, in my view, conducting a classic public relations campaign and of protecting their own vested interests. But the interests of most citizens of the Beaufort area may not have been served by those actions. It is questionable if the resorts will ever provide the number of high paying, skilled jobs that a major petrochemical complex could have offered. If implemented, the plan for the development of agricultural cooperatives in a marginal agricultural area probably could not have produced the same kind of prosperity for the large number of poor people of the county.

The growth issue is beset with ignorance - ignorance that can be exploited by vested interest groups to their own ends, whether good or bad for community interests. Researchers may have to go further than they like. Not only must they attempt to eliminate ignorance on growth issues, but it may be necessary to objectively follow through to assure that neither ignorance nor information is misused.

The product of impact research must be useful to communities. This is not always the case. I have seen many input-output studies that summarize results on one page, provide page after page of methodology and rationalization of exponents, followed by the computer printout. If our work is to be useful in the community, we cannot produce for our peers. The need is to provide our information in the simplest, most understandable form possible, so that it can be rationally considered by community decision-makers. An input-output analysis is nice, but it doesn't mean anything until some one explains it to community decision-makers.

As I said in the beginning, the aim of working toward an understanding of the impact of economic growth upon a community is also to make a contribution to community economic development policy setting and to community definition of goals and strategy. Our output should be realistic and attainable within the limits of the community environment. Community economic growth should be aimed at purposes that may be summarized in general terms. First, encouraging community growth of a nature sustainable and consistent with broadly set goals and, second, working actively toward meeting major special problems that could thwart the community development effort.

Goals of all the people in the community are the important feature of the successful development program. There are some universals that most people want but they must appear relevant to the whole community to achieve complete acceptance. Most people want full employment and high and rising standards of living. They want an equitable distribution of income. They want incomes whose worth in real terms will not be jeopardized by inflation or taxes. They want housing, recreation, social services, utilities -- all the infrastructure that is the definition of a "good" place to live, work and play.

To achieve such broad objectives, people develop goals to attain the

maximum sustainable growth in output of goods and services within the community. But when they begin to consider the impact, they begin to qualify and contradict these goals. It turns out that they may not really want maximum output at the expense of some sort of imbalance between population and ecology or at the expense of land that can be tilled or mined or subdivided. They do not want maximum output at the expense of good working, good living, or good playing.

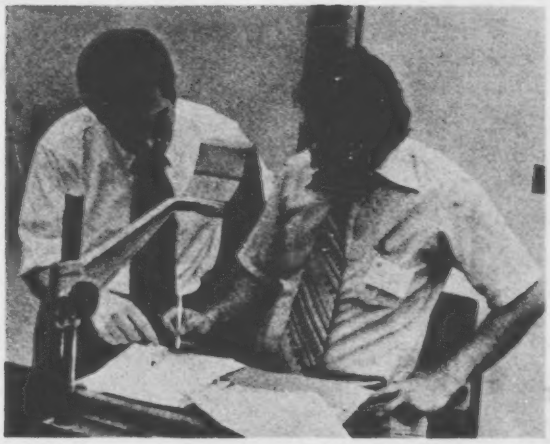
No one set of growth-measuring techniques has the versatility needed to handle the variety of community goals and growth problems to be dealt with if we are to predict impact. Whatever technique is selected to measure growth, the need for the understanding of its application will be great. Answers must not be elaborate and results must be reasonably adapted to the situation. Application can best be achieved among people of understanding. The nature of our information and the way it is presented can be effective, but only if many people in the community can be induced to take an active interest in economic affairs and to work to broaden their understanding of how the economic growth affects their community. This is the major challenge to acceptance of the impact information we present to a community.

PART II

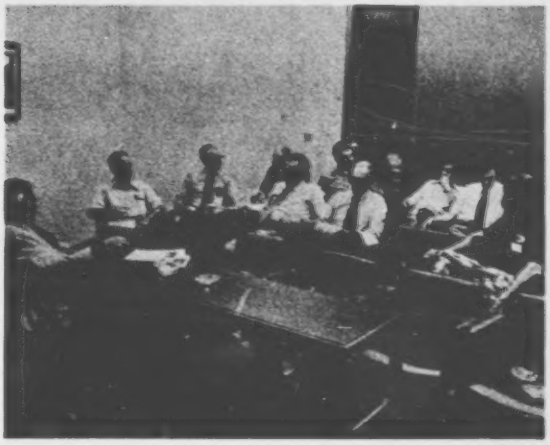
CASE STUDIES

OF

GROWTH



Above, left - Malcolm I. Bevins (standing, left), University of Vermont, and Gerald L. Cole, University of Delaware, used cases in their analysis of the impacts of seasonal home developments. Above, right - Virginia Polytechnic Institute economists J. Paxton Marshall (left) and Burl F. Long presented a case study on the impacts of a utility construction project. Below, left - Edmund F. Jansen, Jr., University of New Hampshire, laid the foundation for a case study problem on a proposed residential development. Below, right - In small groups, participants considered alternatives for the proposed residential development.



THE IMPACT OF SEASONAL HOME DEVELOPMENT

Malcolm I. Bevins
and
Gerald L. Cole

I. INTRODUCTION

In 1970 there were over two million seasonal homes in the United States, and the market was predicted to reach eight million units by 1980. A special census report indicated that 38 percent of the U.S. seasonal home stock is located in nine Northeastern states (New England plus New York, Pennsylvania, and New Jersey).[1]

Seasonal homes can have a major economic impact in those rural areas where the population base is small or where industry is lacking. Purchases of local goods and services can be significant. Seasonal homes also place demands on local units of government for water and sewer systems, roads, waste removal and numerous other local services. Also of direct concern to many is the environmental impact of development in rural areas. In the 1973 report of the Citizen's Advisory Committee on Environmental Quality, "second home" development was highlighted as one of the most critical land-use issues to be dealt with through state and federal legislation.

In this paper, "seasonal homes" refers to housing units occupied for various periods of the year to carry out leisure time activities. Thus, a seasonal home is distinct from the permanent legal residence of the owner or renter.

We will not attempt to separate the effects of seasonal homes from those created by the demand for other recreational services in a community. The two effects are usually intertwined because some form of recreational activity brings the seasonal home buyer to the area in question.

Indications point to a rapidly expanding future market for seasonal homes.

Malcolm I. Bevins is Associate Resource Economist in the Department of Resource Economics, University of Vermont, Burlington.

Gerald L. Cole is Associate Professor in the Department of Agricultural and Food Economics, University of Delaware, Newark.

[1] U.S. Bureau of the Census, "Second Homes in the United States," Current Housing Reports, Series H-121, No. 16 (Washington, D.C.: Government Printing Office, 1969).

7.86 blank

As seasonal home development progresses the magnitude of environmental quality problems as well as the benefits accruing from this use of land resources will increase. Problems which are urgent today may become critical tomorrow.

There are numerous ways in which the impacts of seasonal homes could be evaluated. We choose to begin by presenting a list of issues that might be raised by local leaders as a result of their concern about seasonal home development. The social, political and environmental issues which they might raise include the following:

Permanent residents do not want outsiders coming into community.

Local community decision-making is transferred to new groups.

Urban social problems are brought into rural areas.

Out-of-staters have no interest in maintaining or improving environmental quality.

Seasonal homes create soil and water pollution.

Fragile areas are built upon:

High elevation areas may have erosion, vegetation destroyed, etc.

Low elevation areas may have high water table, marsh lands may be degraded, marine food chain may be disturbed due to dredging and filling.

Seasonal homes are esthetically unpleasant.

Open space is lost to seasonal home development.

Traffic congestion becomes a major problem.

Seasonal properties are often rented; renters do not maintain properties like owners.

Good agricultural land is lost to development.

The economic issues commonly raised by local leaders include some related to community services and costs and others related to commercial activity and to business generated. These economic issues are summarized as follows:

A. Relative to community services and costs

1. Municipal water and sewer systems must be established to accommodate a concentrated development of seasonal homes.

2. Police and fire protection must be expanded to protect vacation homes, especially in remote locations.

3. More roads and higher quality roads must be constructed and maintained.

4. Schools must be enlarged to accommodate seasonal residents who later decide to become permanent residents.

5. Ultimate financial impact of 1-4 above

   a. Higher per unit cost of providing community services.
   b. Ultimately higher taxes on year-round residents.
   c. Possibly less revenue forthcoming from other sources (e.g., less state aid to education since town is now considered wealthier).

B. Relative to commercial activity and business generated

1. "Undesirable" businesses are encouraged to move into the area to serve seasonal resident desires.

2. Little money stays in the area as contractors often are not local.

3. If local contractors are employed in the development, permanent housing construction suffers.

4. Seasonal homeowners spend only small amounts in the local community.

5. Prices of all goods and services sold in the area are high because seasonal residents are more affluent.

6. Land values rise and farmers can no longer pay higher taxes caused by increased appraisals.

7. Energy requirements overtax the capacity of the existing systems.

Part II discusses economic issues relative to the provision of community services. We will utilize some data from Vermont to assess the overall impact of seasonal homes on property taxes of year-round residents. Part III deals with the economic issues relative to the commercial activity generated by seasonal home development.

In Part IV we discuss four examples of seasonal home communities, relating available evidence to the issues cited above.

In Part V, we will present, from a regional study, some opportunity costs associated with the lack of environmental quality controls in selected communities in the Northeast. Environmental attitudes of seasonal residents, permanent residents and local officials are also discussed.

In Part VI a benefit-cost framework for evaluating a seasonal home development proposal is presented. Finally, in Part VII we give a checklist of questions which might be asked of a seasonal home developer by local officials. A list of additional useful references is also included.

II. EVALUATION OF COMMONLY RAISED ECONOMIC ISSUES REGARDING COMMUNITY SERVICES

Most of the economic issues that are raised by individuals and groups discussing seasonal home development have basic threads of validity. In this section and in Part III it seems appropriate to discuss each of these economic issues and evaluate them in terms of impact variability.

Issue: municipal water and sewage systems must be established to accommodate a concentrated development of seasonal homes

Vacation home development in Vermont was relatively slow from the late 1800's up to the end of World War II. Then, as workers had more leisure time and more discretionary income, an increased interest in seasonal homes developed. As a result, realtors and developers saw an opportunity to "market" vacation home developments. While individual homes continued to develop in isolation, a strong move in the direction of concentrated communities became common, especially around lakeshores and near ski areas. The need for community water and sewer systems was immediately apparent. Few people would question the need for such community services where concentrations of seasonal homes emerge.

Impact variability - the impact of developing a community water or sewage system need not fall entirely upon a town or local community. At one time this was thought to be entirely a municipal responsibility, however, this attitude has changed. It is not unrealistic to ask a seasonal home developer to pay for the installation of a water and sewer system. He simply adds the cost of this installation to the price of the individual seasonal home lot. In some cases the newly installed systems have a greater capacity than that which is needed by seasonal residents and it may be possible for sections of the permanent population to tie into the new system. The possibility of such action is dependent upon the size and concentration of the seasonal development and the developer's willingness to serve others in the local area.

Issue: police and fire protection must be expanded to protect vacation homes, especially in remote locations

Since most seasonal communities are located in rather remote areas (privacy and scenic amenities being sought), the need for an expanded police and fire protection system is immediately apparent. Vacation homes are often located in wooded areas where fire hazard is high. To compound the problem, the ability to move fire fighting equipment to remote locations in wooded areas is complicated by steep slopes, bridge limitations, etc.

In like manner, the potential for vandalism is high. The majority of seasonal homes are vacant for long periods of time. Theft and vandalism may not be detected for prolonged periods. In such cases recovery and prosecution are very difficult.

Impact variability - if the burden of police protection is too great for the local community, it might be possible for a seasonal homeowners association to hire a full-time security officer (or officers) who would reside permanently in the seasonal community. It is probably impractical for the

seasonal community to assume the development of a fire protective system (such as a volunteer fire department). Ultimately, fire protection will, of necessity, be a burden placed upon the year-round community.

Issue: more roads and higher quality roads must be constructed and maintained

The cost of road development in seasonal communities may run high because of steep slope and shallow soils. It may be necessary to pave roads on steeper slopes to prevent washouts during periods of heavy water runoff. While seasonal residents might be satisfied with a gravel road, annual maintenance might be lower if some type of hardtop construction material is used.

Impact variability - to diminish the fiscal impact of a seasonal home development, the local community before granting a permit can require that roads be constructed by the developer which meet town and state standards. In such a case, the initial cost of road construction is borne by the developer; however, unless otherwise specified, the maintenance of roads will ultimately fall upon the year-round community road department.

The required maintenance of roads will be related to the amount of use these roads receive throughout the year. In a summer community it may not be necessary to plow and maintain roads during the winter months. In a ski area community this becomes a major town operating cost unless state aid is available.

Issue: schools must be enlarged to accommodate seasonal residents who later decide to become permanent residents

Every seasonal resident potentially is a permanent year-round resident. Suburbia was relatively unimportant before World War II. Perhaps the suburbia of tomorrow is the seasonal home community of today. If such a transition does take place, educational facilities must be expanded.

The likelihood of transition from seasonal community to year-round use is probably greater in the Northeast than in other parts of the country--where there are fewer nearby employment opportunities.

Lakeshore studies done in Vermont indicate that the intention of converting seasonal residences into year-round homes is still very low. In 1970, Bevins[2] found that less than 5 percent of all seasonal residents in six Vermont lakeshore communities had any intention to convert cottages to year-round living. The likelihood of conversion in ski area communities is greater. Homes in these areas are constructed to withstand lower temperatures, and utilities are installed at lower subsurface levels.

---

[2] Malcolm I. Bevins, Attitudes on Environmental Quality in Six Vermont Lakeshore Communities, Bulletin 671 (Burlington: Vermont Agricultural Experiment Station, June 1972).

Impact variability - it appears that the principal factor influencing the likelihood of year-round home use is the distance from seasonal home to place of employment along with ease of travel. Those seasonal communities located within an hour or two of major employment centers will undoubtedly experience major conversions to year-round use and will face the ultimate need to expand existing school systems. However, seasonal homes in more remote areas, such as northern New England, will probably remain seasonal in use with relatively low conversion. It is difficult to obtain sound research data on conversion rates. However, experience in Vermont ski area communities indicate that very few children have been brought into local school systems.

Another major consideration related to the likelihood of conversion is the potential impact of higher priced and possibly less readily available gasoline. These two factors will, in all likelihood, slow down anticipated conversion.

In summary, it must be concluded that service costs to seasonal communities might be higher (on a per unit basis) than the cost of providing similar services to existing village centers. However, it should be recognized that these costs may be lower for seasonal communities than for scattered seasonal homes in remote locations.

The cost to the community (and, ultimately, the taxes on year-round residents) will depend upon how the responsibility for community service development is shared between the developer and local government. The total cost to the local community will depend, to a great extent, on whether or not the existing educational system must be expanded, and this, in turn, is dependent upon the rate of conversion from seasonal to year-round use. A major conversion to year-round use appears unlikely except in seasonal home communities located near metropolitan centers.

The Financial Impact Issue: A Case Study of the Impact of Seasonal Homes on Permanent Resident Property Taxes in Vermont

Small Vermont towns are becoming important rural retreats for city people. In 1973, Vermont seasonal homes were worth about $636 million[3]. This compares with $424 million in agricultural properties. That year, in 45 towns in the State the value of the vacation properties equaled or exceeded 30 percent of the total fair market value of all properties.

The year-round residential tax burden in a small community can be properly evaluated only when compared with the value of year-round homes in that community. If the value of residential property is high, one would expect residential taxes to be high. Conversely, if the value of residential property is low, one would expect residential taxes to be low. The town with

---

[3] According to Vermont Tax Department data, Vermont seasonal properties were worth $215 million in 1967 and $459 million in 1971. Some of this increase was due to inflation and some was due to new construction.

average value homes (in comparison with the rest of the State) should have a residential tax burden that is average (in comparison with the rest of the State).

To analyze this relationship, all towns in the State were arrayed from low to high on the basis of average value of year-round residential properties per capita. Towns were then assigned a value index ranging from 1 to 100 (100 representing towns with the most valuable year-round homes per capita). In like manner, taxes on year-round residential properties per capita were arrayed from low to high and these values were translated into a 1 to 100 index (100 representing towns with the highest taxes per capita on year-round homes). In such an analysis, we might consider the "norm" to be an identical index number for value and tax. If a town were in the 50th percentile in terms of value of residential housing per capita, it would be considered realistic if taxes on residential properties were in the 50th percentile. This can be expressed as a straight line relationship (Figure 1). Towns plotted below the "norm" line have a positive deviation from the expected relationship, that is, year-round residents are paying lower taxes than would normally be expected considering the value of year-round housing in that community. Year-round residents of towns which are plotted above the "norm" line are paying higher taxes per capita than would be expected.

An analysis of this tax/value relationship for these 45 towns where 30 percent or more of the value of all properties is in the form of seasonal homes shows that only 13 towns fell above the "norm" line. Thirty-two of these towns fell below the "norm" line. This means that year-round residents in 71 percent of these towns were in an enviable position in regard to property tax. It is reasonable to assume that taxes paid by seasonal residents in those towns significantly lightened the burden of those living in the town on a year-round basis.

However, Figure 1 does not include all of the major seasonal communities, as some communities had other major components of the tax base. It is important to look at the principal vacation towns in terms of total value of seasonal properties as opposed to percentage of the tax base. Figure 2 shows the tax/value relationship in the 50 principal seasonal communities in Vermont (actual value of seasonal homes). About two-thirds of these towns fell below the "norm" line. Those towns lying below the "norm" line (tax advantage) had an average of 271 seasonal properties, while those towns lying above the "norm" line had an average of 257 seasonal homes.

Appraisal of Vermont Seasonal Properties for Tax Purposes - Taxes paid by property owners are a function of two elements--the tax rate and the property appraisal. Probably no element of property taxation arouses emotions more than discussions of appraisal rates at the local level.

Appraisal practices of local listers in Vermont are carefully reviewed by the State Tax Department, since state aid to local education is based on community wealth. State Tax Department officials review individual classes of property to determine the relationship between appraisal rate and fair market value. This is done by studying a sample of each class of property in every Vermont community. In Table 1, the 15 principal Vermont seasonal home communities are listed and the average appraisal rate for permanent residences is compared with the average seasonal home rate. In these 15 communities, there appears to be a relatively equitable system of appraisal between permanent

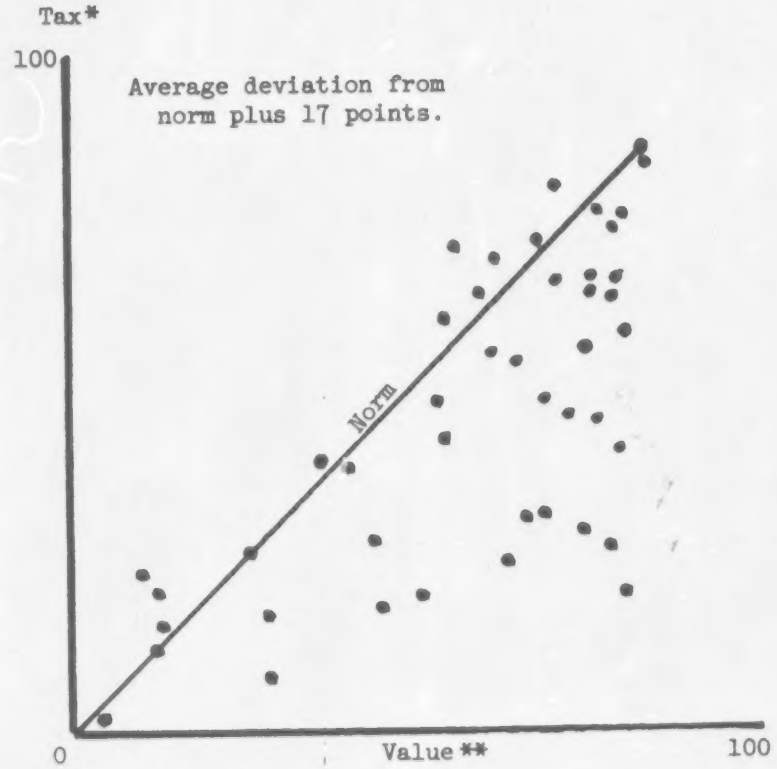


Figure 1. Relationship between year-round residential property taxes and year-round property values, 45 Vermont towns where vacation properties represented 30 percent or more of the fair market value of all real estate, April 1973.

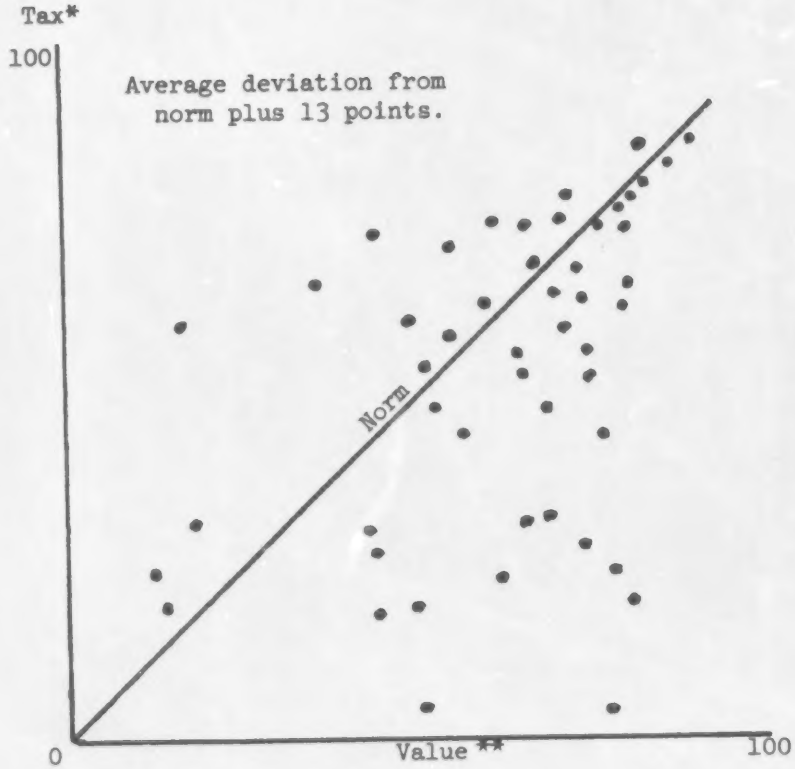


Figure 2. Relationship between year-round residential property taxes and year-round property values, 50 principal seasonal communities (fair market value) April 1973.

*Year-round residential property tax per capita index.
**Year-round residential property value per capita index.

and seasonal homeowners. That is, local town appraisers are not favoring one group over another in their system of appraisals. For the 15 communities studied, the unweighted average appraisal rate on permanent residents was 27 percent of fair market value, while on seasonal properties it was 28 percent.

Table 1. Appraisal Rate of Permanent and Seasonal Properties, 15 Principal Vermont Seasonal Home Communities, 1973

Town	Appraisal rate of properties (Percent of Fair Market Value)	
	Permanent	Seasonal
Winhall	36	38
Wilmington	32	34
Dorset	39	39
Dover	16	18
Stowe	36	39
Greensboro	25	21
Sherburne	15	16
Warren	24	32
Manchester	25	23
Londonderry	21	21
Ludlow	28	27
Fayston	24	24
Jamaica	20	26
Plymouth	21	21
Barnard	40	35
Unweighted average	27	28

III. ISSUES RELATED TO COMMERCIAL ACTIVITES

Issue: "undesirable businesses are encouraged into the area to serve seasonal resident desires

Sociological differences between permanent and seasonal residents lead to diverse activity interests. It is quite possible that a liquor store may be established in a rural community which had heretofore been "dry." Night clubs featuring "Boston bands" may appear in a quiet rural setting. In a free market system without controls over business establishment, there may be an introduction of new businesses which the year-round permanent residents consider "undesirable." However, not all seasonal residents are looking for a duplication of commercial activities that are found in more urban areas. Sinclair and Meyer's study of nonresident landowners showed relatively little

interest in commercial activity[4]. They found that the principal activities engaged in while at the seasonal property were, in order: (1) working on the property, (2) resting, (3) hiking, (4) hunting, and (5) touring nearby areas.

It should be noted that seasonal home communities can lead to the establishment of needed commercial services. Remote rural areas experience major difficulties in enticing professional service personnel (doctors, lawyers, architects, etc.). The increased demand for such services created by the seasonal market and associated recreational development increases the likelihood that more professionals will establish offices in the rural area. The professional person may be seeking such an office location so that he and his family can recreate nearby.

Impact variability - Well-developed land-use planning and zoning can guide and direct commercial activity. Businesses can be required to comply with realistic criteria in regard to signs, noise, and location within the town. Vermont is fortunate in having relatively strong land-use controls which supplement local control over development. If a community is without realistic local controls, the power of the state is even greater. Communities without soundly developed land-use plans should take steps immediately to implement the same if the adverse effects of commercial activities associated with seasonal home development are to be avoided.

Issue: - little money stays in the area as contractors often are not local

Later in this paper we will examine the situation where developers from distant communities have been brought into the local area to construct condominiums. A similar situation can be found in the larger mountain-type or lakeshore seasonal home developments. Whether or not an outside firm is employed for seasonal home construction is dependent upon market conditions. In many instances, there are no local contractors available to perform the work on the time schedule required by the developer. In other cases, the type of construction is too specialized for local contractors.

Impact variability - As long as the free market is operating, local contractors have as great an opportunity to obtain construction contracts as outside firms. In fact, local contractors might be able to submit lower bids, as less travel and movement of materials would be necessary. However, where the magnitude of construction is great and economies of scale come into play, probably larger outside firms will have a competitive advantage.

Issue: if local contractors are employed in the seasonal development, permanent housing construction suffers

Local contractors might find seasonal home construction more profitable than year-round home construction. Seasonal properties often sell for high prices, and the potential seasonal homeowner may be less price conscious. Such construction work may thereby be more appealing to local contractors and permanent housing might suffer as a result.

---

[4] Robert O. Sinclair and Stephen B. Meyer, Nonresident Ownership of Property in Vermont, Bulletin 670 (Burlington: Vermont Agricultural Experiment Station, May 1972).

Impact variability - The importance of planning and zoning at the local level comes through clearly. A well developed land use plan might specify the relative amounts of seasonal and permanent housing allowable. Such restriction is justifiable on the basis of human resource capabilities. Such capabilities are a major component of criteria used in evaluating Act 250 applications in Vermont. A subdivision permit may specify that seasonal or permanent housing construction must be phased over a specific period of years so as to avoid an adverse impact on local schools. The same criterion might lead to the establishment of a ratio of permanent to seasonal home construction in the community. The ultimate ability of a town to use this control over growth is dependent on the strength and quality of its land use planning and zoning.

Issue: seasonal homeowners spend only small amounts in the local community

Purchases by seasonal homeowners can be grouped into at least two categories. (1) initial purchases during construction and the purchase of furnishings and (2) annual purchases and maintenance expenditures. A study of the Lake Latonka development in Pennsylvania showed that 41 percent of the landowners planned to buy 75 percent or more of their furnishings from business firms in the local county[5]. In 1966, the Bureau of Outdoor Recreation made a northern New England vacation home study[6]. This study indicated that average weekly expenditures of seasonal residents totaled $67 for food, meals, recreation, clothing, transportation, etc. This translated into $777 spent annually for such purchases in the local area during the time the vacation home was used. Additionally, seasonal residents were paying an average of $193 in real estate taxes and $280 annually for household and sports equipment. All of these monies were being spent in the local community.

Impact variability - Whether or not goods and services are purchased locally will depend upon their availability. Seasonal homeowners, like other consumers, still desire convenience in the purchase of goods and services. If the quality desired is available locally, there is every reason to believe that their purchases will be made at the local level.

Issue: prices of all goods and services sold in the area are high because seasonal residents are more affluent

There is no sound research data available to either support or refute this issue. To realistically evaluate this question, one must look at the quality of the product being sold as well as the price. Oftentimes, a higher quality product is placed on markets in seasonal communities than that which is normally purchased by less affluent consumers. If this is the case, the higher price associated with such products might be justified.

---

[5] Richard N. Brown, Jr., Economic Impact of Second-Home Communities: A Case Study of Lake Latonka, Pa., ERS-452 (Washington, D.C.: U.S. Department of Agriculture, 1971).

[6] U.S. Bureau of Outdoor Recreation, Northern New England Vacation Home Study, 1966 (Washington, D.C.: Government Printing Office, 1967).

Issue: land values rise and farmers can no longer pay the higher taxes caused by increased appraisals

In a free market, the value of land increases as the number of bidders for a particular piece increases. As property in recreational and seasonal home communities is sought by more individuals, land prices will rise. Land will move out of agriculture to other uses. In 1972, Sinclair and Meyer indicated a substantial shift in second home communities from agriculture into vacation or recreational uses[7]. The shift is rarely opposed by farmers as they are the recipients of substantial capital gains over their initial investment. A farmer who desires to continue farming can take the sales proceeds and reinvest in an agricultural area where land values and pressures for other uses have not been as pronounced.

In total, the impact upon agricultural production has been quite negligible in Vermont. Those areas with greatest recreational values seldom have high agricultural productivity values. In 1968, Bevins found little overlap between towns where conditions were optimum for farming and those best suited for recreational development[8]. Mountain areas with good views seldom have soils capable of supporting a viable agricultural operation.

Impact variability - Preferential tax treatment for existing agricultural operations has been a method chosen by permanent residents in several Vermont towns to preserve open space. Such towns have enacted special legislation stabilizing property taxes on farms in return for the farmers' agreement not to subdivide during a specific contract period. Such agreements have the ultimate impact of decreasing pressures on the farmer to sell for nonagricultural development. Contracts may be established for variable periods of time depending upon the interest of the local community. This may slow seasonal development, however, it will probably not stop it. Stowe, Vermont, a major recreation comples, has recently enacted such legislation.

Issue: energy requirements overtax the capacity of existing systems

Until recent years such an issue received little consideration. However, with the existing energy shortage, this issue must be more carefully evaluated. There is no question that in areas where energy is in short supply, increased use by seasonal homeowners could create an undesirable situation.

Last winter, one member of the Vermont House of Representatives sent a memorandum to Governor Salmon requesting that there be a policy of fuel allotment giving priority to year-round residents of Vermont. Furthermore, she reiterated that the second home dweller should be given energy allotments to serve him only on days when he is in residence. Seasonal homes should be directed to shut down the heating system completely when not in use (using antifreeze to prevent freezing).

---

[7] Sinclair and Meyer, op. cit.

[8] Malcolm I. Bevins, Agriculture and Recreation: Competitive or Compatible? (Burlington: Vermont Agricultural Experiment Station, University of Vermont, April 1968).

A high percentage of the seasonal homes constructed in Vermont utilize an electrical heating system rather than fuel oil or natural gas. Such systems were established when greater use of electricity was encouraged by the power industry.

Impact variability - Undoubtedly there will now be fewer seasonal homes constructed using electrical heat. The price of electrical power has increased substantially, and the cost advantage of installing systems and heating homes in this manner is rapidly disappearing. However, this may simply transfer the problem to another source of energy also in short supply. It is quite conceivable that at some time in the future everyone will be given a basic energy allotment, with further amounts available only at a substantial increase in price. If such is the case, the desire for a seasonal home might be significantly reduced.

In summary, each of the economic issues raised relative to commercial activity in rural areas has at least some validity. However, in nearly all cases the shortcomings associated with such development can be overcome by sound planning and zoning. Ideally, such planning and zoning will be initiated at the local level, where specific problems can be most accurately foreseen. State control over land development and planning can provide the necessary common thread tying together individual town efforts.

IV. CASE STUDIES OF FOUR SELECTED SEASONAL HOME COMMUNITIES

This section draws on studies of the communities of Lake Latonka in Pennsylvania and of Fenwick Island and South Bethany in Delaware. It considers a proposed high-rise community.

Lake Latonka

The material for the first case comes from an Economic Research Service, U.S. Department of Agriculture publication by Brown[9].

Lake Latonka is situated in Western Pennsylvania within 1½ hours driving time from downtown Pittsburgh and ½ hour from Youngstown, Ohio.

In late 1964, a private developer purchased 1,275 acres of cropland, pastureland, and bottomland in order to develop a 1,600 lot subdivision with a 270 acre lake. All the lots had been sold by 1966.

Success is partially attributed to the development's close proximity to two urban centers and to the prior travel patterns of Pittsburghers who vacationed on Lake Erie, travelling past the Lake Latonka site. Nearly all of the 1,300 lot owners lived within 100 miles of the development.

It was estimated that by 1970, 250 homes would be started. Approximately 25 of these 250 owners intended to reside in the community permanently. Other lot owners had not made firm building plans.

---

[9] Richard N. Brown, Jr., Economic Impact of Second-Home Communities: A Case Study of Lake Latonka, Pa., ERS-452 (Washington, D.C.: U.S. Department of Agriculture, 1971).

Economic Impacts

The impacts of the seasonal home development may be divided into those which occurred during the development process--including subdivision, dam construction and home construction--and those impacts which occur as a result of user activity in the area in the post-development period--such as purchase of recreation goods, furnishings for the homes, etc.

Development impacts - Early developmental costs dating from 1964-65 were incurred primarily by the developer but were also shared by lot buyers, utility companies, commercial interests, and governmental agencies (see table 2). Of the total costs incurred by the developer, $435,000 was spent on land acquisition, $65,000 on site selection, $150,000 on design layout and construction, $500,000 on lake construction (including $150,000 to repair the dam which broke in 1966), $600,000 on service facilities, $800,000 on sales and promotion, and $450,000 on overhead costs.

Table 2. Estimated Private and Public Development Costs, Lake Latonka, Pennsylvania, Fiscal Years 1965-70

Development Costs Paid by	Total Expenditures Through 1970
Developer	$3,000,000
Lot buyers	3,000,000
Utility companies	835,000
Commercial interests	100,000
Government agencies	65,000
Total	$7,000,000

The $3 million for lot owner expenditures by 1970 is based on the assumption that 250 homes valued at $12,000 each will be constructed.

The local economy was estimated to have benefited directly from about one-third of the total developmental expenditures - the remainder went outside the area.

One of the measurable local impacts that resulted from the Lake Latonka development was the increase in assessed valuation of property at both the county and township levels. The increase in assessed valuation attributable to the community between 1965 and 1967 was $990,000. This was 10 percent of the county's increase and 50 percent of the townships' increase during the 2-year period. By 1970, the total increase directly attributable to Lake Latonka was expected to be $2 million. Using local tax rates, total increased revenue generated was estimated at $140,000. Two local school districts shared in nearly two-thirds of the increase.

Since the community is semi-private, local governments need to provide

provide very few services. The developer did not provide for schools within the community, and therefore local officials were concerned about the burden on existing schools. However, by 1970 it was estimated that there would be a net gain of 51 pupils in the districts as a result of permanent residences at Lake Latonka, whereas the total number of potential students from among the property owners was 1,800. As long as this 1965-70 trend continued, there would be a minimal burden on the school system. Another mitigating factor was the declining school enrollment from among the other residents of the school district. Enrollment peaked in 1965-66 and had declined since that time.

The developer established a private water system, road networks and recreational facilities within the community, including maintenance of the dam and lake. Property owners were assessed annual maintenance and user fees to support these services. As long as the community remains private with a governing home-owner association, the demand for services from local government seems minimal. As a result, the tax revenues generated for county and township governments are largely a windfall that lessens the burden on other property owners in the area.

Use Activity Impacts - A survey of lot owners was made in 1967 to ascertain the user trends in the community. Prior to the construction of a home, lot owners made approximately 12-15 visits per year to the community, usually on a day-use basis.

Lot owners who planned to build by 1970 indicated an estimated total annual use of 130 days. With a party size of 5.1 persons, total annual user days would thus be 118,000.

Combining the annual variable expenses of users with and without a home in the community, by 1970, assuming 250 homes in the community, the total spent would approximate $480,000.

Other expenditures which should also be considered include such items as furnishings and recreation equipment.

Social, Political, and Environmental Impacts

The main focus of the Lake Latonka report was to assess economic impacts of development. However, a few non-economic factors may be noted.

The majority of property owners came from urban centers within 100 miles of the development. This suggests that their interests and service demands may be similar.

The governing body in the community is a homeowners' association. The legal framework established by the developer provided for annual fee assessment of property owners. A majority vote of the owners is required for altering the fee levels for maintaining facilities. However, provision of a legal framework for the association seems preferable to voluntary arrangements such as will be described in a later example.

The report mentioned that the dam was washed out in 1966. At that time the developer promptly repaired it, because he was still on the scene and selling lots. What would the impact be if the dam were to need extensive repairs

at a future date? Would the homeowner-maintenance association be able to generate sufficient capital to make the repairs? If not, what would be the effects on the quality of the recreational experience and resultant property values?

Another potential problem area not mentioned in the report is sewage disposal. The individual lot owners were required to provide on-site septic tank disposal systems. It is highly possible that when the community is built up, there will be a water pollution problem in the lake, since it appears that drainage is toward the water from the surrounding home sites. If swimming is banned in the lake, what happens to property values? This is an example of a cost which is external to the individual property owner, i.e., not entirely borne by him, but which will be internal to the community. That is, if the septic systems fail, a community sewage treatment facility may be necessary. Will demands be made on the local or federal government to assist in providing this facility?

Fenwick Island and South Bethany, Delaware

Fenwick Island

Fenwick Island is located on the southern Delaware Atlantic shore next to the Maryland line. The incorporated town is composed mainly of single-family dwellings and a few commercial establishments. There were 333 homes in 1970.

The town of Fenwick Island was incorporated in the early fifties and has a mayor-councilmen form of government. All individuals 21 years of age and over whose names appear on a property deeded in the town's boundaries are eligible to vote in town elections.

The permanent population is about 58 people, with an estimated seasonal population of 3,000. The community is bordered on the east by the Atlantic Ocean, on the west by the Little Assawoman Bay and on the south by Maryland. The number of waterfront properties in the community has increased by the dredging of lagoons or canals between the streets and the filling of low areas on the bay side of the community. No ocean front homes are located on the primary dune.

An area of dense development, approximately seven blocks square, in the southeast corner of the community, is not incorporated in the town of Fenwick Island. There are a number of commercial units in this area. The exact reason for this area not being in the incorporated town is unclear.

South Bethany

South Bethany had its beginnings in the early 1950's when the lots were laid out and offered for sale by a private developer. No county land-use controls were in effect at that time. Deed restrictions were imposed by the developer. These included a minimum size for the dwelling and set-back and side yard restrictions.

This community is also located between the Little Assawoman Bay and the Atlantic Ocean on Delaware's coast; it is four miles north of Fenwick Island

and five miles north of the Delaware-Maryland border. In 1970, South Bethany had 247 dwellings located within its boundaries. The permanent population is less than 50, and the seasonal population reaches approximately 1,200.

The growth of South Bethany has been very recent. The town of South Bethany was not incorporated until 1969. Prior to that, it was a private community. It has a mayor-commissioner form of government. All individuals 21 years of age and over whose names appear on a deeded property in the community are eligible to vote in town elections.

Lagoons or canals were dredged between all streets on the bay side of the community, creating waterfront lots for the majority of the property owners in the community. More than half of the lots in the community are still undeveloped. The first row of homes on the ocean side are built on the primary dune.

The town government provides trash pickup arranged under contract with a private collector. Policemen and lifeguards are also hired by the town.

Socio-economic Profile

A background on the socio-economic characteristics of the seasonal occupants of the two communities may be a useful prelude to the discussion of developmental issues concerning economic, political, social, and environmental factors. These data are from Delaware's contribution to a regional research project (NE-65) conducted in 1970 by Chicoine[10].

Most of the seasonal occupants have their permanent residence within 200 miles (see table 3). This places them within Delaware or the nearby states of Maryland, Pennsylvania, Virginia, and the District of Columbia (see table 4). Analysis reveals that 44 percent of South Bethany's occupants and 28 percent of Fenwick Island's occupants come from the Washington, D.C., Standard Metropolitan Statistical Area.

Nearly all the heads of households from both communities are over 35 years of age (see table 5). The majority of the permanent residents are of retirement age. Occupants of both communities are well-educated, with over 70 percent of the occupants in Fenwick reporting some college experience and over three-fourths of those in South Bethany likewise (see table 6). Seasonal occupants have relatively high levels of family income. Nearly 30 percent of the respondents in Fenwick and over 40 percent of the respondents in South Bethany had at least a $20,000 income (see table 7).

In summary, seasonal occupants from both communities are well educated, have relatively high incomes, are likely to be of middle age, and tend to come from urban areas. This sets the stage for the types of services that are likely to be demanded by the seasonal occupants and for consideration of institutional arrangements necessary to provide the services.

---

[10] David L. Chicoine, "A Profile of Delaware's Seasonal Home Occupants and Permanent Residents with Local Public Policy Implications" (Master's thesis, University of Delaware, 1971).

Table 3. Distance of Seasonal Home from Occupant's Year-Round Home, By Community

Miles	Community	
	Fenwick Island	South Bethany
	- Percent -	
Less than 100	25.2	17.4
101 - 200	63.2	74.4
201 & over	11.7	8.2

Table 4. State in Which Seasonal Occupants Had Permanent Residence, By Community

State	Community	
	Fenwick Island	South Bethany
	- Percent -	
Delaware	39.2	29.8
Maryland	32.9	39.7
Pennsylvania	18.7	6.6
Virginia	5.8	16.5
District of Columbia	2.5	4.1
Other	5.6	4.0

Table 5. Age of Seasonal-Occupant and Permanent Resident Household Heads, By Community

Age Category (in years)	Community			
	Fenwick Island		South Bethany	
	Seasonal Occupant	Permanent Resident	Seasonal Occupant	Permanent Resident
	- Percent -			
Less than 25	0	0	0	0
25-34	5.2	10	10.7	0
35-44	20.0	10	21.54	0
45-54	36.8	10	33.1	16.7
55-64	23.9	10	21.5	16.7
65-74	8.4	40	8.3	33.3
75 and over	1.3	10	.8	33.3
No answer	4.5	10	4.1	0

Table 6. Educational Level Achieved By Seasonal-Occupant and Permanent Resident Household Heads, By Community

Education	Community			
	Fenwick Island		South Bethany	
	Seasonal Occupant	Permanent Resident	Seasonal Occupant	Permanent Resident
	- Percent -			
Less than 12 years	7.1	20.0	8.3	0
12 years	21.3	30.0	15.7	33.3
Between 12 and 16 years	18.1	0	16.5	16.7
16 years	19.4	20.0	19.8	0
More than 16 years	28.4	20.0	14.6	16.7
No answer	5.8	10.0	2.5	16.7

Table 7. Annual Gross Family Income of Seasonal Occupants and Permanent Residents, By Community

Income	Community			
	Fenwick Island		South Bethany	
	Seasonal Occupant	Permanent Resident	Seasonal Occupant	Permanent Resident
	- Percent -			
Less than $10,000	14.8	60.0	9.1	50.0
$10,000-19,999	40.6	10.0	33.1	0
$20,000-29,999	15.5	20.0	23.1	0
$30,000 and over	13.5	0	20.7	33.3
No answer	14.8	10.0	14.0	16.7

Economic Impacts

For these two communities, data are not available on the impact of the original developmental activities, unlike the case for Lake Latonka. However, county and local tax data will serve to exemplify the impact of the existing development.

The two communities, both being incorporated municipalities, are allowed to levy property taxes for local services. Fenwick maintains its own assessment rolls, while South Bethany relies on county assessment figures as a basis for taxation. Fenwick had local tax revenues of $12,485 and South Bethany $8,117 in fiscal 1970.

At the current rate, the property tax revenues are not sufficient within the two communities to provide the needed services. The local municipalities are able to rely on both federal and state appropriations to offset the deficit, however. The federal government, through revenue sharing and a program to reduce crime, has been one source of funds. The state government provides revenue in the form of a municipal street aid fund, depending on the miles of roadway in the town, to build and maintain the local road systems.

For Fenwick Island, in fiscal 1972, property tax receipts represented only 43 percent of the total town expenditures. Thus it may be argued that town citizens are being subsidized by both federal and state taxpayers. In fact, as a result of the outside grants, total town expenditures were 82 percent of total revenues, leaving a surplus in the town's treasury.

The same sources of grant funds are available to South Bethany. Crime reduction funds from the federal government were used to purchase a police car and hire two policemen. State street aid funds were utilized to rebuild a street, paralleling the ocean beach, which was destroyed in the 1962 storm. Other streets in the community were also repaired. Thus a transfer of federal and state funds has been and is taking place for the benefit of seasonal occupants. This is another example of a trade-off with diversion of funds from other federal and state needs.

Sussex County, Delaware, is currently undergoing a property reassessment. The previous assessment was made in 1958, and taxes are computed on 50 percent of market values from that time. Because Sussex County provides relatively few services, and due in part to the rising tax base from seasonal home construction, in fiscal 1970 the total county tax rate was only $5.50 per $1,000 of assessed valuation. The local school tax in the seasonal communities was $9.30. Using the 1970 assessed valuation in the two communities, the revenue generated for the local school district was $36,545 and for the county government, $18,272.

School tax revenues appear to be largely a windfall gain to the local district, because the vast majority of permanent residents in both communities are retired with no school age children. Furthermore, in the 1970 study only 2.5 percent of the respondents from either of the communities were planning to make their seasonal homes permanent residences prior to retirement. Thus the tax burden is lessened for permanent county residents, since the school tax benefits accruing from seasonal residents definitely exceed the costs.

The county government is involved in the provision of other services. These include landfills, assistance from the engineer's office in planning for water and sewer districts, building code inspections, and grants-in-aid to local volunteer fire companies. It is not clear whether county tax revenues exceed the costs from the seasonal home areas. However, the most rapid expansion in the county is taking place along the coastline, making waste disposal problems among the most critical being faced by county administrators. This suggests that costs may exceed revenues on a pro-rata basis for the seasonal communities.

The state government's major source of revenue is the income tax. There is no sales tax. Unless seasonal occupants have income sources in Delaware they do not contribute directly to state revenues until they purchase goods and services within the state.

Seasonal occupants do contribute to state revenues through the purchase of goods and services from retailers in the coastal region. Meinen's recently completed study of the coastal zone economy concludes that 20 percent of total retail sales are attributed to tourists in the region, although this includes recreationists who are not seasonal home occupants[11]. The impact varies by sector of the retailing industry. Eating and drinking places indicated that 47 percent of their sales were to tourists, and boat and trailer dealers assigned 65 percent of their sales to the tourist industry.

---

[11] Robert L. Meinen, An Analysis of Selected Economic Sectors of the Ocean Shore Coastal Zone of Delaware (Master's thesis, University of Delaware, 1974).

Services provided by the state that influence seasonal communities include construction and maintenance of state highways and all nonprivate roads outside of incorporated municipalities. State police patrol unincorporated areas as well as state highways. Sanitary and health measures as well as environmental controls have been established at the state level.

Social, Political, and Environmental Impacts

While South Bethany's growth has occurred more recently than Fenwick's, both communities are faced with similar problems in the provision of needed services and in achieving solutions to environmental problems.

When South Bethany began as a private community in the early 1950's, there was no provision for local governance. Eventually, a group of property owners was formed with voluntary dues and voluntary contributions to community needs such as street maintenance and beach clean-up.

Individual property owners provided for their own private wells and septic tank systems - on 50 x 100 foot lots. It was also the individual's responsibility to bulkhead his lot if it bordered on one of the canals which had been dug. This combination of small lots, individual sewage systems, a high water table, and location next to canals created the potential for water pollution problems.

As the community grew to over 200 homes by the mid-1960's, the voluntary arrangement proved unsatisfactory. Streets needed resurfacing and some property owners were unwilling to make contributions. There were requests for trash collection and lifeguards. There were problems with boaters speeding in the canals. Also, there was evidence of water pollution in the canals and bay. State water resources personnel were called in by the residents to take water samples from the canals. Results indicated pollution levels of as high as 4,800 coliform bacteria per 100 ml. (The maximum permitted for water contact sports is 1,000 per ml.). Finally, many property owners had not bulkheaded their lots, and the soil was washing into the canals.

The voluntary property owners' group saw incorporation of the community as a basis for solving or lessening the numerous problems cited above. This created two factions in the community - one in favor of incorporation and one against. Those opposing incorporation did so primarily because they were against too much government in a seasonal community where they came to relax, not to attend meetings.

South Bethany was incorporated in 1969 after property owners had turned down a proposal to incorporate in 1968. In the town charter, provision was made for council members from the ocean side and the bay side. Another issue related to representation is that of seasonal vs. permanent residents. Currently, a majority of the council members are permanent residents.

The town government has passed ordinances to regulate building in the community, to require bulkheading of properties, and to regulate use of the beachlands.

Also, the council has combined forces with other coastal communities, including Fenwick Island, and the county government to establish a regional water and sewer district. This was done because of increasing water pollution levels in the waterways as development continued. In 1973 an Environmental Impact Statement was approved by the Environmental Protection Agency, and in 1974 a $3.9 million grant for a regional treatment facility and collection system was authorized. Total cost was estimated at over $40 million, with 75 percent to be borne by the federal government, 10 percent by the state, and 15 percent by the users. The water district was established, but construction of a facility is not expected to begin before 1975 or 1976. The result will be a double cost to residents, since they had previously provided for individual water and sewer systems.

Establishment of the water supply and waste disposal districts came about because of environmental awareness and concern by seasonal residents, not by permanent residents of non-seasonal homes in the county.

Another environmental issue which is of major importance in the coastal zone is land use. The coast line is vulnerable to storms. South Bethany, as a private community, had no regulations preventing construction on or in front of the primary dune. Fenwick has prohibited such construction. The last major storm which caused extensive property damage was in 1962. There were 28 homes built on the dune in South Bethany and all were totally destroyed. In Fenwick there were 75 homes in the first row just behind the primary dune and 15 were destroyed. Federal insurance against water damage was not available at that time. As a result, the property owners incurred the loss. Thus society did not subsidize those seasonal home owners. Insurance is now available under the National Flood Insurance Program.

If more stringent land-use controls had been enforced in South Bethany, beach front property owners could have been "protected from themselves". More importantly, if construction is kept off the dune, which is then allowed to build up through natural action, properties behind the dune receive protection from wave damage during coastal storms.

In summary, the two communities of Fenwick Island and South Bethany illustrate many of the problems of seasonal home development in a seaside environment.

A High-Rise Community

Next, we would like to provide background information for evaluating a proposal for a new seasonal home development on the Delaware Coast. It would consist of 1,000 housing units - a combination of single family townhouses and high rise condominums. A potential of 4,000 persons could inhabit the units at peak periods. The development tract is located in an unincorporated area between South Bethany and Bethany Beach on both sides of the coastal highway.

Since the proposed community is located in an unincorporated area, the Sussex County Planning and Zoning Commission rules on the application. The County Zoning Ordinance did not originally provide for high-rise buildings but it was amended in 1973.

The potential property owners are expected to come from the Washington, D.C., area. While there is a divided highway in the north-south direction, the only access road to the west toward Washington is a two-lane state highway that winds through several small communities where the posted speed limit is 35 miles per hour.

The developer has contacted the town of Bethany Beach to provide water for the community. Demand would be more than double the existing level. The coastal region has adequate ground water supplies, but there are two problems. One is the danger of salt water encroachment into the well fields; the second is the quality of water supplies. A high iron content necessitates special treatment. Individual home owners must attach conditioners to their private systems in order to make the water acceptable for drinking.

The proposed community would be tied into the regional sewage treatment facility and has received approval from the Environmental Protection Agency to do so.

Fire protection would come from the volunteer company in Bethany Beach. However, there are no other high-rise buildings in the area, so the firemen lack equipment and training for high-rise structures.

Police protection would have to come from a private force or from the state level since the community is unincorporated.

Using the current county and school district tax rates and assuming the assessed valuation at 50 percent of market value, the county government could expect to receive a maximum of $112,500 annually in tax revenues--a 10 percent increase over current tax collections. The major county service that would be provided is the county landfill. Also, the county engineer has provided assistance with the design of proposed water and sewer systems.

The local school district could receive up to $220,000 in taxes annually. It is anticipated that there would not be more than 50 children enrolled in the district from the high-rise community. The development would remain primarily a seasonal community due to the lack of a local employment base for potential residents and because the driving time to Washington and Baltimore is only approximately 3 hours each way.

Conflicts have arisen between the developer, citizens' groups, and the town governments in nearby incorporated communities. After the initial development plan was presented, concerns were voiced by local seasonal residents about traffic congestion, beach crowding, and the availability of adequate water supplies and waste disposal facilities, but the state planning office and environmental control agencies chose not to get involved in the controversy. Local governmental officials are also concerned about law enforcement problems and adequate fire protection.

Current seasonal home owners seem to be developing the attitude, "We have our seasonal homes, and we don't want any more in the area." Thus, pro- and anti-development forces are at odds with each other.

A major issue is one of future land-use directions in the coastal

region. Construction of a regional sewage treatment facility will have a growth-inducing effect. Approval of one high-rise community will make approval of future projects more likely. Rising land values make the cost of constructing single-family seasonal homes prohibitively high. Clustered development reduces the cost of providing essential services, but it also increases the population density in the developed areas.

Finally, in nearby Ocean City, Maryland, building permits have been issued for 9,000 condominium units since 1970. Not all have been completed. The softening economy due to high interest rates and the energy situation has reduced the short-term demand for condominiums. As a result, sales have declined and mortgage foreclosures were reported during the winter of 1973-74.

With the above information in mind, would you approve construction of the high rise community?

V. ENVIRONMENTAL CONSCIENCE IN SEASONAL COMMUNITIES

In 1970, seasonal home lakeshore communities were studied in Delaware, Maine, New Jersey, Pennsylvania, and Vermont. The attitudes of seasonal residents as they related to environmental quality were studied in depth[12].

A series of statements was posed concerning human and natural resources in the seasonal home community and each resident (seasonal and permanent) was asked to personally evaluate environmental conditions. To add another dimension to the analysis, town officials (not necessarily living on the lakeshore) were asked to evaluate environmental conditions in the lakeshore community. For comparative purposes, a team of resource economists from the participating states evaluated environmental quality in the same communities.

Comparison of Attitudes

Without getting into the detail of absolute numbers involved in an environmental quality rating system, some important conclusions might be drawn from this regional research. A Spearman rank correlation analysis showed that there was significant correlation between the ratings assigned by the resource economists and community lay people[13].

There was complete agreement between the seasonal home resident and the resource economist in the identification of the two best communities and the two worst communities studied in the five-state region. There was slightly less agreement on the ranking order for communities falling between the two extremes although the orders were quite similar.

---

[12] H. B. Gamble et al., Environmental Quality Effects Associated with Seasonal Home Communities, Bulletin ___ (University Park: Pennsylvania Agricultural Experiment Station, 1975).

[13] The correlation between the two ratings for natural features was significant at the 95 percent level. The correlation between the ratings for man-made features was significant at the 99 percent level.

In the Vermont section of the study, environmental quality as perceived by year-round residents, town officers, and seasonal residents was compared[14]. The similarity of attitudes among the three lay groups was remarkable. This similarity of attitudes between the three groups of people in the community (the seasonal homeowner, the year-round resident, and the town official) has important implications. Vermont still retains the town meeting but votes at town meeting are only given to year-round residents. However, this research indicates that the year-round resident is as concerned about environmental quality as the seasonal resident. If environmental issues are raised at a town meeting, attitudes expressed by year-round residents should be quite representative of the attitudes of the seasonal population.

From this study we learned that people do respond openly to unsightly and unhealthy features of the environment. Residents of the six lakeshore communities were not apathetic, nor were they turned off when adverse conditions were evaluated. (Scientists have noted that the human being can turn off that which bothers him, thus making life a little more bearable.) Residents in the six Vermont communities did not exhibit this trait[15].

Attitudes Toward Restrictions to Maintain Environmental Quality

Most people recognize that if environmental quality is to be improved or maintained, man must police himself and accept restrictions on his behavior. Seasonal residents, year-round residents, and town officers in the Vermont communities studied were asked to react to certain restrictions. Once again, the attitudes of the three separate groups were remarkably similar. Year-round residents, seasonal residents, and town officials favored and disfavored the same types of restrictions.

Most individuals supported restrictions on the use of pesticides and detergents. They generally agreed that there should be some further muffling of outboard motors to reduce noise pollution. Most persons were ready to accept a limit on the maximum number of seasonal homes that might be developed in their communities. There was greater willingness to accept area zones for specific activities (trail bikes, water skiing, automobiles, motorboating) than there was to accept restricted time zones on recreational activities. At the bottom of the scale of acceptance was restriction on architectural design.

The two restrictions receiving the highest level of acceptance (pesticides and detergents) are also items that appear high on the ecologists' target list, and much publicity has been given to these issues. But use of pesticides and detergents is very difficult to police. Those restrictions that might cause the greatest personal inconvenience (restrictions on time

---

[14] Malcolm I. Bevins, Attitudes on Environmental Quality in Six Vermont Lakeshore Communities, Bulletin 671 (Burlington: Vermont Agricultural Experiment Station, June 1972).

[15] Esther L. Brown and William R. Nelson, "Effects of a Changing Environment on Human Happiness and Welfare," Agricultural Science Review, Vol. 9, No. 3 (Third Quarter 1971), 27-30.

periods for specific activities and restrictions on architectural design) were the least acceptable. Conceivably, if conditions worsen in the local area and more publicity is given to other environmental issues, the list of acceptable restrictions will increase correspondingly.

VI. BENEFIT/COST COMPARISON

Up to this point, discussion has centered on economic effects, sociological impact, changes in environmental quality, and factors related to the political system in the local community. To be most meaningful, each of these factors must enter into some sort of a formula or weighing of costs and benefits. It is extremely difficult to combine into a single ratio all tangible and intangible costs and benefits as is required for many federal projects. A method has been developed by Foster and Van Binsbergen which combines both those budgetary elements where a dollar value can be assigned and those elements requiring a qualitative evaluation difficult to measure in dollar terms[16] (see table 8). This concept is not difficult to understand, nor does it differ from the type of analysis used by the profit-seeking firm in the decision-making process. Utilizing the Foster and Van Binsbergen analysis, costs and benefits are weighed and the persons and groups affected, or who must ultimately bear the greatest impact, are identified. This type of benefit/cost analysis has much merit, as it can be used by lay people at the community level.

Table 8. Comparative Benefits and Costs

Item	Benefits (Who and amount)	Costs
Tangible elements:		
Actual total	_____	_____
Average yearly	_____	_____
Intangible elements:		
Regional income	_____	_____
Social well-being	_____	_____
Visual quality	_____	_____
Environmental impact	_____	_____
Social security benefit	_____	_____
Opportunity cost	_____	_____
Other	_____	_____

[16] John H. Foster and Albert Van Binsbergen, Information for Community Resource Decisions: A Guide, Publication No. 30 (Amherst: Massachusetts Cooperative Extension Service and Massachusetts Agricultural Experiment Station, July 1972).

Tangible Elements

To be most meaningful, dollar benefits and costs should be expressed on an annual basis. On the plus side of the equation (benefits), seasonal homes create tax revenue. Estimates can be made of property taxes likely to be generated. On the minus side of the equation (costs), the annual service bills which are to be paid from local treasuries must be estimated (road maintenance, fire and police protection, etc.). Also on the minus side, there must be an annual prorating of total capital costs to be borne by the community (water and sewer installation, road construction, etc.). Capital costs are usually amortized, with interest, over the projected life of the water, sewer, and road systems. If two new snow plows must be acquired by the town, their cost should be prorated over the useful life of such equipment. All tangible elements, both benefits and costs, must be reduced to an annual basis.

Intangible Elements

1. Regional income--On the benefit side of the equation, employment created from the seasonal home development must be visualized. Additionally, business will be generated for the commercial sector, and such business will have a multiplier effect (monies spent by one party in the community are received by another who, in turn, transfers this to someone else, etc., etc.). Also on the benefit side, there may be an increase in the sales of locally produced goods such as farm produce, maple syrup, and craft items.

On the cost side of the regional income section of the equation, there is the possibility that some employment and income generators may be lost. Land values and, ultimately, taxes on real estate could rise, forcing some businesses to close. Some farms might go out of business. Other small firms operating on a marginal basis might also be forced to close down. For example, a campground uses much land but often has relatively low profits. If land taxes increased, the campground might be forced to close, which would tend to reduce camper spending in the community.

2. Social well-being--On the benefit side, the new seasonal development might increase quality of life in the community. The "new" population could have an interest in developing a summer theatre or a concert hall, enticing artists to the area, or might initiate a financial drive for a new library.

On the cost side of the equation, the seasonal development might reduce social well-being because of "people pollution." There is likely to be an increase in traffic and noise and an ultimate increase in undesirable commercial activity if no controls exist to direct associated development.

3. Visual quality--On the benefit side, high quality, good looking seasonal homes might be constructed. Seasonal residents might buy older colonial homes and restore them to their original beauty. Homes in higher value seasonal home communities usually have fairly large lots with attractive landscaping. Development need not be unsightly--well designed quality homes and grounds can be more attractive than uncared-for wood lots (although it may be difficult to convince some individuals that this can be

the case). On the cost side, without realistic land use controls, poorly designed and closely spaced seasonal homes can be a scar on the landscape. Inter-connecting roads, scattered mail boxes, and overhead power and phone lines can be most unsightly.

4. Environmental impact--In this section of the equation we must weigh those factors which will ultimately influence natural resources in the community. On the benefit side, the "new" residents of the community may have a greater environmental conscience than those persons who have lived in that community for many years. Many seasonal homeowners are attracted to rural areas because such areas have not yet deteriorated as have year-round metropolitan communities. These new residents do not want to see the environment destroyed, and they will work hard to see that it is preserved[17]. Also, the taxes generated by the presence of seasonal residents may provide the tax base that is needed to construct pollution control systems to serve both year-round and seasonal residents.

On the cost side, the likelikhood of soil erosion, vegetative loss, and water and air pollution must be carefully considered. Natural resource specialists (soil scientists, water quality engineers, and other environmental experts) should be consulted to gain expert opinions to aid community leaders in studying this section of the equation.

5. Social security benefits--We must next concern ourselves with intangible benefits to human life and health. Perhaps the community can now afford an ambulance because of contributions from seasonal homeowners (either in the form of taxes or gifts). Also, a doctor might be enticed to move into the "new" community to serve both seasonal and year-round homeowners. Professional people like to locate in areas where their family can participate in recreational activities near home. However, unless the service population base is large enough, such a move is unfeasible from a business standpoint.

6. Opportunity costs--On the last element of the equation, we must consider benefits foregone because community funds have been diverted to develop facilities for the seasonal community rather than invested in some other community project. Capital funds used to construct a sewage disposal plant might have been used to develop a new school, or, considering annual operating costs, town funds might have been used to hire a lifeguard at the public beach rather than diverted to the plowing of roads in the seasonal community.

From a physical standpoint, once a land area has been committed to a specific use it is difficult, in the short run, to make changes. Land which goes into seasonal home development is no longer available for public recreation purposes. The intangible benefits foregone by such commitment must be carefully evaluated.

In summary, there is a certain amount of overlap between elements of the benefit/cost equation. However, if community residents and their leaders carefully evaluate <u>each</u> element, the most important considerations will, at some point, enter into the decision-making process.

---

17. Malcolm I. Bevins, <u>Attitudes on Environmental Quality in Six Vermont Lakeshore Communities</u>, Bulletin 671 (Burlington: Vermont Agricultural Experiment Station, June 1972).

VII. SOME QUESTIONS WHICH MIGHT BE RAISED TO EVALUATE A PROPOSED SEASONAL HOME DEVELOPMENT

Financial Impact

1. What will be the likely new property tax revenue generated:

   a. From homes - considering number, concentration, and type of home to be built (single-family detached, town house, condominium, mobile home, modular, etc.)?

   b. From service establishments - considering number and types?

2. What will be the likely new sales and income tax revenue which will accrue to the local community?

3. How will the local employment situation change?

4. What capital construction costs will the community incur:

   a. For water and sewer systems?

   b. For new roads?

   c. For a solid waste disposal system?

   d. For new buildings and equipment for police, fire, and administrative departments?

5. What annual operating costs will the community incur for:

   a. Existing town services (water, sewer, roads, police, fire)?

   b. New town services (insect control, solid waste disposal, etc.)?

6. What is the likelihood that seasonal homes might be used on a year-round basis, and, if they should, what impact would this have on:

   a. The existing educational system and its cost?

   b. Added services above those listed in 4 and 5?

7. If some services are provided originally by the developer, who pays for such services when the development is completed?

8. If some services are to be borne by a homeowners' association, will potential seasonal home purchasers be fully informed, in writing, as to the likely annual cost and commitment they are accepting?

9. What is the financial position of the developer?

10. What type of performance bond is the developer prepared to post guaranteeing completion of "promised" services?

11. Can and will local utility companies install and provide the services which ultimately will be sought?

12. Will any of the services developed for the seasonal community benefit the year-round community?

13. How will state aid to the community change after construction is completed?

    a. State aid for roads?

    b. State aid for schools?

Environmental Impact

1. How will the proposed development alter the ecosystem?

    a. Impact on soils (erosion, pollution, etc.)?

    b. Impact on water quality?

    c. Impact on air quality?

2. What are the "people" problems which might arise from an influx of vacationers?

    a. Traffic congestion?

    b. Noise?

    c. Crowded conditions for water recreation?

3. What provisions will be made by the developer to install and pay for pollution-abatement devices?

4. Has the developer filed an Environmental Impact Statement with the Environmental Protection Agency and pertinent state agencies?

    a. If yes, what issues were raised and what was the developer's response?

    b. If no, was the developer exempt?

5. Does the proposed development comply with the requirements (and philosophy) of "plans" prepared by the state, region, or coastal zone?

6. Does the community have strong enough control (such as zoning) over development to provide assurance that adverse environmental effects will be minimized?

7. Does the permanent community have a well-conceived long-range development plan, and how does the seasonal development proposal fit into that plan?

Political System Impact

1. How will the existing system of town control change through the addition of seasonal residents to the community population?

   a. Will seasonal residents be allowed to vote on local issues?

   b. Will seasonal residents be eligible to hold local office or serve on local committees?

2. What political privileges will be extended to any proposed seasonal "homeowners' association", and are these same privileges extended to seasonal residents not members of the proposed association?

Social Impact

1. What is the likely socio-economic profile of the typical seasonal resident, and how does this compare with the profile of the permanent resident?

   Will they mix well or clash?

2. Will the town be divided into two or more communities of interest, or will there be reasonable compatibility?

3. Will the community experience a positive or negative cultural change if the development is approved?

4. Will a seasonal use pattern have any negative effects on social and religious organizational structures?

Additional Useful References

Bevins, M. I. "Impact on Taxes of Seasonal Homes." Vermont Farm and Home Science, Vol. 16, No. 2 (Winter 1974), 3.

Block, William J. Rural Zoning: People, Property, and Public Policy, Extension Bulletin 600. Pullman: Cooperative Extension Service, Washington State University, November 1969.

Bromley, Daniel W. Rural Development for Whom: A Market Failure Approach, Staff Paper Series. Madison: University of Wisconsin, September 1972.

Carter, Robert M. Summer and Country Homes in the West River Valley. Burlington: Vermont Agricultural Experiment Station Bulletin 591. June 1956.

Cuthbertson, Ida D., and Harris, Harold M., Jr. "The Fiscal Impact of a New Community: The Reston Experience." Virginia Agricultural Economics, No. 256 (March 1974), 1-4.

Donovan, Terry, and Frazer, Kathy. Vacation Home Survey of Eight Vermont Towns. Montpelier, Vt.: Agency of Development and Community Affairs, 1972.

Fantus Company. How Much Can We Influence the Growth of Industry in Rural Areas? New York: The Fantus Company, 1970

Fernstrom, John R. Bringing in the Sheaves. Corvallis: Oregon State University, 1974.

Hinman, Robert Charles. The Impact of Reservoir Recreation on the Whitney Point Microregion of New York State, Cornell University Water Resources and Marine Science Center Technical Report No. 18. Ithaca, N.Y.: Cornell University Agricultural Experiment Station, August 1969.

Jahns, Irwin R., and Smith, Norman G. A Profile of Non-resident Recreation Property Owners in an Appalachian County, Misc. Pub. No. 589. College Park: Maryland Agricultural Experiment Station, March 1967.

Kotler, Milton. Neighborhood Government: The Local Foundations of Political Life. New York: Bobbs-Merrill, 1969.

Kuennen, Daniel S. Community and Resource Development Through Group Process: A Group Guide for Action, Ext. Circular 133. Newark: Cooperative Extension Service, University of Delaware, March 1973.

Leadley, S. M., and Pignone, M. M., eds. Systems Analysis for Rural Community Services. University Park: Dept. of Agricultural Economics and Rural Sociology, The Pennsylvania State University, 1972.

Lee, Alvin T. M. "Taxes and Financing of Public Services." Cooperative State Research Service, U.S. Department of Agriculture, Washington, D.C., 1972.

Leopold, Luna B.; Clarke, Frank E.; Hanshaw, Bruce B.; and Balsley, James R. A Procedure for Evaluating Environmental Impact, Circular 645. Washington, D.C.: U.S. Geological Survey, 1971.

Lewis, Allen R. "Some Environmental Situations and Costs Associated with Coastal Development in Sussex County, Delaware." Unpublished Master's thesis, University of Delaware, 1971.

Moss, William H., and Clonts, Howard A., Jr. Costs and Returns of Subdivision Development, Bul. 427. Auburn, Ala.: Agricultural Experiment Station, Auburn University, January 1972.

Osborn, Ben. Land Use Principles: A Reading and Discussion Guide. Washington, D.C.: Graduate School Press, U.S. Department of Agriculture, 1968.

Ragatz, Richard L. The Vacation Home Market: An Analysis of the Spatial Distribution of Population on a Seasonal Basis, Cornell Dissertations in Planning. Ithaca, N.Y.: Dept. of City and Regional Planning, Cornell University, 1969.

_____. "Vacation Homes: An Analysis of the Market for Seasonal-Recreational Housing." Dept. of Housing and Design, Cornell University, Ithaca, N.Y., 1969.

Sargent, Frederic O. Guidelines for Quality Environment Planning, Pamphlet 38. Burlington: Vermont Agricultural Experiment Station, March 1973.

Sinclair, Robert O. Property Taxes and Rural Landowners. Burlington: Vermont Agricultural Experiment Station, 1969.

Snyder, Robert W. "Seasonal Homes Benefit Minnesota." Minnesota Science, Vol. 24, No. 2 (Winter 1968), 18-21.

_____. "Using Local Comprehensive Planning to Control Lakewater Pollution in Seasonal Home Communities." American Journal of Agricultural Economics, Vol. 51, No. 5 (December 1969), 1583-1587.

_____. "Vacation Homes, Economic Development, and Local Government Policy on Rural Minnesota." Minnesota Agricultural Economicst, No. 519 (June 1969), 1-4.

Southern Windsor County Regional Planning and Development Commission. Effect of Second Home Development on Ludlow, Vermont, 1973. Windsor, Vt.: ENVICO, 1973.

Stephens, Rockwell, and Smith, Clyde. "The Great Leisure Home Bonanza." Vermont Life, Vol. 26, No. 3 (Spring 1972), 10-18.

"'Stop' Signs for Development Going Up All Over U.S." U.S. News and World Report, January 21, 1974.

Tobey, D. M. Seasonal Home Residents in Five Maine Communities, Bul. 700. Orono: Maine Agricultural Experiment Station, December 1972.

Urban Land Institute. The Homes Association Handbook. Washington, D.C.: Urban Land Institute, 1970.

Vermont Development Department and the Interagency Committee on Natural Resources. Vermont Vacation Home Survey, 1968. Montpelier: Vermont Development Department, 1968.

Vermont Public Interest Research Group, Inc. Downhill in Warren: The Effects of the Ski Industry and Land Development on Warren, Vermont. Montpelier: Vermont Public Interest Research Group, Inc., 1972.

White, Donald J. "A Study of Non-Resident Landowners in Allegany, Cattaraugus and Chautauqua Counties," Report No. 3, Resource Development Project. Ellicottville, N.Y.: Farm, Home and 4-H Center, March 1968.

Zagaris, Bruce. Some Legal Aspects of Land Use Planning in the Mountain State. Morgantown: Center for Appalachian Studies and Development, West Virginia University, May 1973.

THE IMPACT OF A CONSTRUCTION WORKER COMMUNITY ON A RURAL COUNTY:

A CASE STUDY

J. Paxton Marshall and Burl F. Long

CREATING THE IMPACT

Back Creek, Virginia, is a remote rural Appalachian Mountain community with a unique natural asset--a geologic formation capable of holding impounded water. The major private electric utility serving Virginia determined after considerable study and investigation that this formation would serve to support a two-dam, pump-storage, hydro-electric generating facility. Before the utility may construct the facility, it must be granted authority to do so, represented by a license issued by the Federal Power Commission.

The license had not been issued in late 1973 when the utility announced that it planned to utilize the geologic formation at Back Creek for a two-dam facility; that the completed facility would involve an investment of some $650,000,000; that at least seven years would be required to construct the facility; and that an estimated 2,400 workers would be employed during the peak construction period.

The utility recognized that such a project would have an impact far beyond Back Creek itself, and it initiated contacts in early 1974 with the local governing bodies of a three-county area--Bath County and Highland County, Virginia, and Pocohontas County, West Virginia. In each case, the utility offered to work with the governing body in an effort to resolve the problems that the construction project would create for the county.

But the long-run impact on the three counties would be substantially different. Bath County would receive an estimated $2,000,000 annually in real property taxes paid by the utility on the facility when completed in the early 1980's. This would be a substantial increase in real property tax revenues for a county which had collected approximately $485,000 annually from property taxes in recent years[1]. This prospective future for Bath County was not shared by Pocohontas County, West Virginia, or Highland

---

J. Paxton Marshall is Professor and Extension Specialist and Burl F. Long is Assistant Professor, both in the Department of Agricultural Economics, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

[1] Commonwealth of Virginia, Department of Taxation, Annual Report to the Governor of Virginia for the Fiscal year ending June 30, 1973 (Richmond, Virginia).

p. 122 blank

County, Virginia. These counties would not obtain any additional tax revenues from the facility, but they would experience major impacts from the construction project. While the extent of the impacts could not be immediately determined by the governing bodies, each one recognized that the utility's action would affect their county and that the effect would be substantial. Each county confronted a different set of problems. Our paper is limited to a case study of the potential magnitude and distribution of the impacts that the utility's construction project will have on Highland County, Virginia. This county shares a common boundary with Bath County and lies to the northeast.

The Impact on Highland County

The Highland County Board of Supervisors was requested to rezone a tract of land the utility had purchased containing sufficient acreage to provide housing for 1,650 people--350 families and 450 individual males. We will call this the "construction worker community" and will refer to it by the acronym CWC, which we will use in the remainder of our paper. The utility's land was located on the outskirts of Monterey, the seat of Highland County. Monterey had a population of about 270 people at the time of the 1970 census, when the county's population totaled 2,529 persons. The utility recognized that its action would cause a severe shock to the county and submitted to the Board of Supervisors a letter in which it offered to reimburse the county for costs arising from the CWC.

The governing body of a rural county is rarely faced with a problem of this type, and it is reasonable to believe that the Highland County Board of Supervisors never expected to confront such a problem. The county's previous major event had been the Maple Syrup Festival held annually on two weekends in late March. The festival generally attracts many people, in fact, so many that traffic jams occur on the two primary roads traversing the county, U.S. 220 and U.S. 250.

The Board reacted to the utility's rezoning request by taking it under advisement. A wide range of questions arose immediately; few had adequate answers. The Board was not the only party lacking an adequate answer to the utility's plan. Interested citizens in the county were also seeking answers. A group of these citizens, who had been identified a few months previously as being influential in the community, organized into a study group or task force[2]. This group turned to the Cooperative Extension Service agent, who turned to his program leader, who wrote a letter containing the statement: "During our study group meeting in Highland County on January 24 [1974] a task force was selected to analyze and make recommendations on the impact the [utility's] project will have on Highland County." The task force had ranked in priority the items they considered important, namely, "schools, police, solid waste, fire protection, medical and health needs, and the revenues to finance local government." The letter also stated: "The Board of Supervisors plans to meet on March 15, and

---

[2] Southern Regional Community Resource Development Committee, The People's Choice; An Approach for Involving Citizens in Community Decision Making, Publication 586, (Extension Division, VPI and SU, Blacksburg, Virginia, September 1973).

it would be helpful if you would be able to supply some information before that time relating to the request of the task force."[3]

This request was obviously somewhat out of the ordinary. Numerous questions resulted. What was an appropriate response? What questions should be asked? What should be the procedure for determining the costs? What data would be needed to determine these costs? Where was the data? Should the utility pay only for direct public costs, or should it pay for some indirect costs? What types of indirect costs would there be? How would these indirect costs be divided between the utility and the county, if they were appropriate to charge to the utility?

When we summed up these questions, there was a single question: "What would be the effect of a construction worker community on a rural county--Highland County, Virginia?" The answer would have importance both to the citizens of Highland County and to the utility, to the former for tax reasons, to the latter for business reasons. Moreover, the question has importance that goes far beyond the bounds of the Highland-Bath-Pocahontas area. Why? Because some 200 or more sites exist in the United States where two-dam, pump-storage-type, hydro-electric generating facilities may be constructed to provide energy to meet the nation's increasing demands. It is a reasonable hypothesis that most of these lie in rural areas.

THE BUDGET APPROACH

The Extension Service responded to the request of the task force by providing a statement described as a first approximation of the impact the CWC would have on Highland County if the utility's rezoning request was approved and the CWC became a reality. This statement was provided by the requested date. There was not time to undertake an economic base study such as we discuss below. Instead, the procedure used was budgeting combined with the application of economic principles.

During the data-collecting phase, we found that the study of the Foster and Green Peter Dams in the Williamette Basin Project on the South Santiam River in Oregon was the most recent study of the impact that the construction of a dam has had upon a community. These dams were constructed during the mid-1960's by the U.S. Army Corps of Engineers for the purpose of flood control, power, navigation, and irrigation. This study showed that the local people reacted to the project with high expectations for growth and that the community over-extended its school system and municipal services. The community experienced a short-term expansion followed by decline when the anticipated economic growth did not occur. The community was left with apparently higher quality services, but also with a higher tax burden[4]. This study

---

[3] Letter from Harvey Shelton, Extension Division District Program Leader in Resource Development, to J. Paxton Marshall, January 30, 1974.

[4] Thomas C. Hogg and Courtland L. Smith, Socio-Cultural Impacts of Water Resource Development in the Santiam River Basin, Water Resources Research Institute Publication WRRI-5 (Oregon State University, Corvallis, Oregon, October, 1970);

Courtland L. Smith, Thomas C. Hogg, and Michael J. Reagan, "Economic Development: Panacea or Perplexity for Rural Areas". Rural Sociology, Vol. 36, No. 2 (June 1971), 173-186.

proved helpful in carrying out the work to follow.

As the data were gathered and discussions were held about how to present the statement, the decision was made to divide the analysis into three primary parts: (1) some public sector items, (2) some private sector items, and (3) some quasi-public-private sector items. Each sector is discussed in turn.

Public Sector Items

These public sector items received attention: (1) rezoning approval, (2) schooling, (3) law enforcement, (4) solid waste disposal, (5) public health, (6) public facilities investment, (7) interest, (8) overhead costs, and (9) tax revenues from (a) real property taxes, (b) sales taxes, and (c) license and franchise taxes.

Rezoning approval--The county governing body considered the utility's rezoning request and, after a public hearing, approved the rezoning and authorized a conditional-use permit. The utility will make the necessary permanent investments on the site, including the water supply, the sewage disposal, and the road or street systems. The utility will not operate the CWC but will contract with a private firm for its operation and management.

The housing will be both temporary and mobile. The housing for the 450 individual males will be temporary and of dormitory style. Families are expected to occupy mobile homes, with the occupants owning most units, parking them on sites provided within the CWC. This will reduce the utility's investment and aid in clearing the area utilized for the CWC after the project is completed.

Schooling--Few counties experience a 65 percent increase in population within a two or three month period. An immediate concern of the Highland County task force was the number of children requiring schooling. Outmigration for many years had resulted in an increase in average age of the county's population and had reduced the number of children among the population to such an extent that the county had closed one of its three elementary schools. The 1970 census reported the county population as having a median age of 40.8 years, substantially above the 26.8 median age reported for the state population. The county had 3.02 persons per household, compared to 3.20 for the state. It appeared reasonable to assume that all families in the CWC would be headed by males and that their ages would range from twenty-five to forty years. Most likely the median would be slightly below thirty-five years, because these workers will be highly skilled and several years of experience are needed to develop such skills.

A wide array of data is available on the schools of Highland County[5]. These data make it possible to predict with a high degree of certainty the number of students expected in each grade and in total when the community is not confronted by problems associated with an influx of 350 families. These problems were further complicated because it was not known if the

---

[5] Commonwealth of Virginia, State Board of Education. Superintendent of Public Instruction Annual Reports (Richmond, Virginia).

initial influx would occur before the beginning of the school year or sometime during the school year. Thus there was much uncertainty.

Given this background, four estimates were made of the potential number of additional pupils. The utility's data indicating that the 350 families would average 3.5 members each provided the basis for the estimates. It was assumed that each family would have an average of 1.5 children. The age of these children was unknown, so the estimates were made only for potential additional children and not by grades.

A. The latest published data available indicated the Average Daily Membership (ADM) in Highland County's elementary and secondary schools in the 1971-1972 school year was 529 pupils and the Average Daily Attendance (ADA) was 503 pupils, and that 21 percent of the county's 1970 census population was attending elementary and secondary schools. Under this condition, the CWC would provide 257 additional children to the school system (350 families times 3.5 members times 21 percent).

B. It must be recognized that the 1970 census reported 23.4 percent of the state's population of elementary and secondary school age and that the ratio of pupils to population in Highland County is lower than that for the state. If the CWC has children in school at the same percentage as the state, there would be 287 additional children (350 families times 3.5 members times 23.4 percent).

C. The prospective age of workers living in the CWC makes it possible that the percentage of children in school would exceed the state average. Thus, additional assumptions were made.

   a) The superintendent of Highland County schools assumed that there would be one child in school per family in the CWC. This would mean 350 additional children (350 families times 1).

   b) It is reasonable that the workers in the families will tend to have a high level of skill. It may be expected that families of such workers would have a higher percentage of school age children than a randomly selected sample of families. Thus, there could be as many as 1.25 children attending school per family in the CWC. This would mean 437 additional children (350 families times 1.25).

As with many things, the estimated number depends upon the assumptions made, but it appears that the number of additional children would be a minimum of 250 and a maximum of 437. This level of demand for schooling could be expected to continue several years, possibly being at its maximum in 1977, 1978, and 1979.

Highland County had a total operation and maintenance cost of $792 per pupil in ADA for the 1971-1972 school year. It may be assumed that the cost of schooling will rise, and if this increase is at an annual rate of 6 percent, cost per pupil would approximate $1,000 by the 1976-1977 school year.

The county pays 55 percent of the total per pupil cost of school operation. (Funds received from state and federal sources pay the remaining 45

percent of such costs.) This would mean the utility would pay an estimated $550 per pupil for each pupil schooled a full year by the county, and the total cost would range from 250 times $550 to 437 times $550, or from a minimum of $137,500 to a maximum of $240,350.

Law enforcement-- Highland County has a sheriff's office. The sheriff is a constitutional officer elected by the people. The CWC will increase the workload of this office. It is reasonable to expect that the staff of this office will be able to handle the serving of any additional papers issued by the court and to handle any additional criminal law enforcement. (One effect of the Foster and Green Peter Dams project was an increase in crime per capita[6].) But the sheriff's office might not be able to handle additional traffic arising from the construction project without additional staff. This traffic will be generated by workers traveling the 22 miles from the CWC to the construction site and by other workers who will be commuting through the county to the construction site from points beyond the county's boundaries.

It is estimated that during the first year the CWC is in operation the sheriff's office will require a minimum of one automobile and two additional staff members specifically for traffic control. During the peak construction period, when work is on a 24-hour schedule, additional personnel and equipment may be needed.

Automobiles would be a capital expense that may be estimated at $4,000 per vehicle. A capital outlay per deputy of $500 is required to purchase uniforms and equipment. The deputies' salaries would be approximately $7,500 per year. Operating costs for the vehicle may be estimated at 15¢ per mile. It is assumed that the vehicle would travel 30,000 miles the first year, so salaries of $7,500 plus 30,000 miles of vehicle operating costs times 15¢ would be $19,500. The capital outlay cost estimate was $4,000 plus two times $500, for a total of $5,000.

Solid waste-- The people in the CWC will require solid waste disposal services. These services could be provided in at least three ways: (1) by a private local contractor, (2) by the contractor operating the CWC, or (3) by the county. Whatever method is utilized to provide solid waste disposal service, the county's landfill will be the disposal site.

A private contractor currently provides solid waste disposal service for the Monterey community. It would appear reasonable to suggest that this contractor combine the CWC contract with his local enterprise and eliminate the need for either the county or the CWC contractor to provide solid waste collection service.

The county cannot resolve other matters associated with solid waste disposal as easily. The disposal site is required by state law. In addition, the county is required to have the site meet certain standards. The level of enforcement of these standards may be expected to rise during the

---

[6] Smith, Hogg and Reagan, op. cit.

construction period. Thus, the county could be required to begin regularly covering the solid waste brought to the landfill. This might be done (a) by contracting for such service or (b) by purchase of equipment by the county. Contracting appears to be preferable, because this would also eliminate need for the county to invest in equipment having costs extending beyond the construction period. But the standards will require the county to continue covering the landfill when the project is completed. Thus, from the utility's viewpoint, contracting would appear preferable, but from the county's viewpoint, equipment purchase would appear preferable. This item is subject to negotiation.

The landfill site is a county cost. The useful life of the site will be reduced by additional solid waste resulting from the CWC. Research shows that some 1.83 pounds of solid waste is developed per person per day[7]. If all the current county population produced solid waste at this rate and utilized the landfill, there would be 825 tons of solid waste per year. A community of 1,650 persons would generate approximately 550 tons of solid waste per year. If we assume the CWC is fully occupied during the construction period, the length of life of the landfill will be reduced by an amount equal to 550 tons times, say, seven (years) divided by 825, equal to 4.6 years. The utility's prorated share of the landfill site cost would, therefore, be the expected life of the landfill divided into the total cost of the site times 4.6 years.

Public health-- The CWC will present some potential problems in public health. These will probably be of two on-going types: an increased work load with respect to regulatory work related to health and sanitation problems in business establishments, and a mix of contagious and communicable disease problems that might arise from a continuing influx of new people into the CWC. The potential for significant public health problems may exist when the CWC is initially populated. The extent of the public health problem is difficult to estimate, but we may anticipate the workload of the public health office will show a substantial increase and, possibly, require one additional staff member at an estimated cost of $8,000 per year.

Public facility investment-- Investment of this type by the county will need careful study and should be held to the minimum possible, because the need for additional public facilities will approach existing levels when the construction project is completed and the population returns to approximately pre-construction levels. There are at least three major types of public facilities to consider: (1) school buildings, (2) school buses, and (3) administrative offices.

The county has a school building that has recently been closed and which may be reopened. This building may not be adequate to meet the needs, but this cannot be determined in advance. Some portable classrooms may also be required at one or more schools. Such costs would be chargeable to the utility and would be in addition to the costs of schooling.

---

[7] Joseph Havlicek, Jr., and Robert Richardson, "Factors Influencing the Quantity and Composition of Residential Solid Wastes: Some Preliminary Results" in Empirical Research in Environmental Economics, ed. by Burl F. Long and Gerald Carlson, Southern Land Economics Research Committee Publication No. 11 (October, 1973). p. 61.

To accommodate the children from the CWC, it may be necessary to reorganize the pupil transportation network and to change the schools which some permanent-resident children attend. The additional costs associated with this would fall into two categories: (1) costs associated with new transportation patterns and (2) costs of additional buses. A careful study of before and after transportation patterns will be necessary to determine any difference in costs. An estimate is not feasible until the new pattern is known. The additional costs would be chargeable to the utility.

Additional school buses will be needed and would be a capital expense. It is estimated that a minimum of three and perhaps as many as five additional school buses will be required. Some of these costs will be covered by the county's share of the total cost of school operation per pupil, but not all. The county considers a school bus to have a ten-year life, but the project will only extend over seven years. Thus, there would be some useful life remaining in the buses at the close of the project when the additional buses were sold because they were no longer required. The utility would be entitled to credit for any income resulting from the sale of the additional buses.

Some county offices may have an increase in use-- the sheriff's office, for example. It would not appear justified, however, for the county to expand the courthouse to provide additional offices, as it is adequate to serve the existing population and will be adequate to serve the population remaining when the construction project is completed. Some reallocation of space may be required, and, if essential, portable facilities could be utilized during the construction period to serve one or more of the county's administrative offices. Such cost would be chargeable to the utility.

Interest-- To meet its cash flow requirements arising from the CWC, the county must either borrow through normal sources or schedule for payments to be made by the utility. This need will arise because the county's revenues are insufficient to meet extra cash flow demands. If the county is required to borrow, the interest is a cost chargeable to the utility. The utility may eliminate this cost by negotiating an estimate of the county's costs and establishing a schedule of payment.

Overhead costs-- The county will experience numerous relatively small costs associated with the utility's construction project and the CWC-- for example, the preparation of the minutes when additional meetings of the Board of Supervisors are held and the cost of electricity to provide lighting for such meetings. Additional travel will be required both in and out of the county. There will be many small costs difficult to estimate individually but real and large in total.

Overhead costs should be handled as a negotiated percentage of the direct cost. The federal and state government and various private and public institutions have had a broad range of experience in determining overhead cost. This experience should provide a useful guide for both parties. Since the problem is unique both to the county and to the utility, it appears appropriate to suggest that overhead be charged on all direct costs except those applicable to schooling and interest payments. A minimum percentage for overhead costs might be agreed to initially, with the understanding that the percentage could be re-negotiated as the county and the utility gain experience in what is to be counted among the overhead costs

and narrow the estimate of what the overhead cost percentage should be.

Tax revenues-- Highland County receives tax revenues from three sources: (1) property taxes, (2) sales taxes, and (3) license and franchise taxes.

1) Property taxes-- The latest published data showed the county levying property taxes on 40 percent of the appraised fair market value. The county had a total assessed value of real estate of $5,311,740; of tangible personal property, machinery and tools, and merchants capital of $1,545,560; and of public service corporation property of $343,237. A total tax of $229,586 was levied on these properties. This was comprised of $157,793 from real estate; $61,822 from tangible personal property, machinery and tools, and merchants capital; and $9,971 from public service corporations[8].

The county will, of course, obtain some additional taxable property as a consequence of the CWC. The amount of tax revenues obtained from the CWC would be used in offsetting costs arising from it.

These revenues would be derived from the real estate investment made on the CWC site by the utility. If the 350 families occupy mobile home units, the maximum revenue that the county could obtain would be $50 per unit annually[9]. The problem of levying a $50 charge on such units is that it would have to be levied uniformly on all such units in the county. This would raise the payment on mobile homes occupied by permanent residents of the county, who probably would not look with favor on such an action. Consequently, the county may be expected to retain a relatively low revenue levy on mobile units and have the utility pay the difference in its direct costs.

2) Sales tax-- Workers on the construction project may be expected to earn reasonably high incomes--say, an average of $6 per hour. Workers living in the CWC may expect full-time employment of 40 hours per week for 2,080 hours per year. Thus, average earnings will approach $12,000 annually after deductions and before fringe benefits. The annual gross income of the housing project would approximate 775 workers (350 plus 450, times a 97 percent participation rate) times $12,000, or a total of $9,300,000.

From each dollar workers spend in the county, sales taxes will result in 1¢ for general government operations and 1¢ for public education. What percentage of their earnings workers will spend in the county is an unknown. At the state level, actual sales represent an estimated 56 percent of workers' income. Applying this percentage to the workers' income, revenues from 1¢ of sales tax would be $52,080. But, because of the general lack of shopping facilities, many of the individual male workers and possibly some of the families may be expected to leave the community on weekends. Under these circumstances, the expenditures within the county will be below the state average. However, it seems reasonable to assume that each worker will spend within Highland County at least 25 percent of the $12,000 earned annually. With this level of expenditures, the sales tax would generate $23,250 for general government and an equal amount for public education. This income

---

[8] Commonwealth of Virginia, Department of Taxation, op. cit.

[9] Section 35-64.5 of the Code of Virginia, as amended.

could also be subtracted from the total of expenses to be paid to the county by the utility.

3) License and franchise tax-- The amount of revenues coming to the county from license and franchise taxes will be relatively modest and has not been estimated.

Public sector summary-- The costs in the public sector are direct costs. In some cases, the problem will be to determine how these costs are to be allocated between the county and the utility. In other cases, negotiation must take place to determine the way the cost should be estimated. Negotiation should probably be carried out through a legal representative for each party. The cost of such a representative for the county should be paid by the county and not charged to the utility, even though the cost arises from the project.

Private Sector Items

The impact of the utility's construction does not fall solely on the Highland County government. There will also be major impacts on the permanent population, depending upon the situation of individuals. We examine six areas in the private sector: (1) taxes, (2) local employment, (3) business opportunities, (4) effects on age groups, (5) permanent jobs, and (6) community power structure.

Taxes-- The residents of Highland County immediately considered the impact the utility would have upon individual tax payments. As we have discussed, the utility offered to pay the direct costs the CWC imposed upon the county. To the extent that such costs are accurately estimated, the property tax paid by local residents should not increase. But the utility's action does not take into account the effects of some other variables. The primary one is that the administrative staff of the prime contractor will buy home sites in the area and may be expected to locate there for a period of seven years or more. These people have relatively high incomes and can afford to pay higher prices for property in the community than are normally paid. The net effect is to drive up the basis on which real property is appraised for taxation. At the time the county is reassessed for tax purposes, the effect of such higher prices may be reflected in the total tax structure. If so, the effects will be reflected in the tax bill of every property owner. This issue will arise at the time the county is required to reappraise all property in the county. The county has the option, of course, of reducing the tax rate, and the Board of Reassessors may lower the assessment ratio. Both actions could serve to maintain total tax payments of permanent residents at near current levels. But overt action will be required by the county to accomplish this. The problem which everyone will encounter is how to separate that part of the increase in value which arises from the purchase of property by the contractor's staff from that part arising from a movement in the general price level. Permanent residents would, of course, expect to pay taxes appropriate to the latter values.

Local employment-- Much skilled labor will be brought to the construction site by the utility's prime contractor. But unskilled and general labor will probably be employed from the local labor supply. While Highland County is not a highly productive agricultural area, a major part of

the income of the community currently comes from farming. It may be expected that some farmers in the community will seek and obtain employment on the construction project. This will mean farm business management will shift to farm wives. In many cases the farming operation will become more extensive, because not only will the owner-operators be working at the construction site but the normal labor available to work on farms in the community will also be employed there. Thus, the agricultural sector will be substantially altered during the construction period.

Employment in local businesses and services will increase. Most males of working age who are not owners of businesses will transfer to the construction site, and the businesses and services will utilize the labor supply available from female members of the population, both the permanent and the temporary residents.

In sum, local employment will boom, and the average wage of farm, business, and service labor will rise.

Business opportunities-- The CWC will have an annual income of approximately $9,300,000, of which 25 percent may be spent in Highland County. In addition, many permanent residents of the county will have higher income. This will encourage many people to try to establish a business, and some will be started.

Some of these may be undertaken by the contractor operating the CWC, others will be developed by local people, and possibly some people will come to Monterey specifically for that purpose.

The local business community's major problem will be coming to the close of the construction period without an excess of business places and related facilities. The conventional wisdom is that large-scale construction projects result in an excess of business facilities when the project being constructed is completed. In a community that has only a modest probability of population and industrial growth after the construction project is completed, special efforts should be made to minimize the number of potentially vacant business facilities[10].

Effects on age groups-- The school system of Highland County will be significantly affected by the CWC. These effects will be created not only by new pupils that are brought into the system but by the reorganization which will be required and the new teachers who will be employed. It is possible that trends will be set in motion which will encourage further outmigration from Highland County as the school children, observing the mobility of people in the CWC, respond to the opportunities such mobility is believed to offer.

Job opportunities for those permanent residents who are in the working ages will be especially good. Incomes will rise, new homes will be constructed, new home furnishings will be purchased, and many families will enjoy a significantly higher standard of living.

For the elderly and other persons on fixed incomes, the project will create severe problems. Higher price levels will raise the cost of living. This will cause severe hardships and a need for residents in the county to

---

[10] Courtland L. Smith, et al., op. cit.

reassess their attitude toward public assistance. Particular attention should be given to providing public assistance to the elderly, especially in the form of food stamps. Without some major effort on the part of both the people in the community and the county government, the elderly will suffer severe hardships:.

Permanent jobs for whom?-- When construction is completed, some 50 persons will be employed to work at the facility. This will be primarily maintenance-type work, as such facilities are administered, monitored, and controlled from a remote central location. These jobs may be expected to provide direct support for 50 families and indirect support for, say, 10 or 12 additional families, depending upon the multiplier. The 50 permanent jobs which will be available upon completion of the project should be of concern to people living in the Highland-Bath-Pocahontas area, the community leaders, the local governments, and the school systems. The utility should initiate a cooperative effort to see that information about these opportunities is available to permanent residents of the area and that a special effort is made to have these jobs filled by members of families who have been permanent residents of the area. This will require a special training effort on the part of some state and local agencies and an early commitment by people of the local community to seek job training in the skills necessary to carry out the operation and maintenance work of the facility.

Community power structure-- Some of the residents of the CWC may choose to vote in Highland County elections. In addition, some may choose to participate in on-going civic, church, and educational organizations of the community. Among these people, some will be accepted into the power structure. As a result, traditional ways may change. Some may even be residents of the CWC a sufficient length of time that they will seek public office and be elected. The probability of this increases when one considers that the county will be reapportioned following the 1980 census. Thus there is a possibility that significant changes will occur in the power structure of Highland County and the community of Monterey.

Quasi-Private-Public Sector Items

We have shown above that the CWC will impose some direct costs on the public sector of Highland County. We have also discussed some impacts that the project will have on the county's private sector. It is essential that the public sector costs be determined with accuracy to minimize the possibility that the private sector of Highland County pays costs appropriately chargeable to the utility and therefore provides a subsidy to the utility. The converse is equally important.

There is, however, another aspect to the problem. It is that some effects are in neither the public sector nor the private sector but lie partly in both. These we have designated quasi-private-public sector items. We will discuss three: (1) private health and medical care, (2) fire protection, and (3) individual and collective human relationships within the community.

Private health and medical care-- Highland County's population is currently served by one physician, a general practitioner, who provides primary care. The present physician cannot be expected to accept many additional patients. This conclusion is based on the physician:population

ratio standard of 1:2,500 considered applicable for physicians in primary care[11]. Additional medical services are twenty to fifty miles away.

It follows that an additional 1,150 adults who are new to the area and do not know about the physician services available at considerable distance and who will have demand for health and medical care for themselves and approximately 500 children will place an exceptional burden on the county's current resident physician. It is reasonable to assert that the CWC will create the equivalent of a crisis in private health and medical care service. The problem may be resolved in a number of ways. One is for the resident physician to increase charges for services rendered. Another is to provide for additional services.

Attracting another physician to the area to serve a transient population for a seven-year period will prove difficult, perhaps impossible. An approach with more assurance of furnishing needed services should be considered.

The county may find a Health Outreach Clinic (HOC)an acceptable solution to this problem[12]. An HOC would have a three-member staff consisting of a family nurse practitioner, a referral clerk, and a records clerk. The family nurse practitioner would have special training qualifying him or her to perform a number of health service functions "beyond the normal skill and competence of a [professional] nurse"[13]. Basically, the HOC would screen patients, provide certain treatment services, and refer patients needing a physician's services to cooperating physicians. An HOC would increase the supply and accessibility of health and medical care services in the county and complement the work of the resident physician. Of course, the resident physician, the public health officials, and some interested citizens of the community will need to investigate the HOC with care. If an HOC appears to be an acceptable solution to the problem, the county could negotiate with the utility to determine how the costs would be met.

The HOC facility could be placed in an existing building or in a new structure--permanent, mobile, or temporary. In the latter case, the estimated cost of getting the facility furnished, stocked, and ready to open as a functioning unit would not exceed $50,000[14]. The staffing costs would vary depending upon the hours of service provided per day and per week. With a three-member staff providing services 40 hours per week, salaries would approximate $25,000 annually. Additional services would result in higher costs.

---

[11] Fitzhugh Mayo, "Primary Physician Manpower in Virginia 1972; Present Supply and Future Needs," Virginia Commonwealth University, Medical College of Virginia, Department of Family Practice (Richmond, Virginia, November, 1972). Mimeo.

[12] George Moore, "How Can the Health Team Function?--The Health Outreach Clinic: Concept, Manpower and Location," a paper presented to the American Medical Association, National Conference on Rural Health (Dallas, Texas, March 28-30, 1973). Mimeo.

[13] Commonwealth of Virginia, Department of Health, "Qualifications and Duties of Family Nurse Practitioner-A" (Richmond, Virginia, October 15, 1972).

[14] George Moore, op. cit.

Additional health and medical care services are clearly traceable to the utility's project and the CWC. Even if this cost is indirect, it would seem appropriate for the utility to underwrite some part of it.

Fire protection-- The CWC will clearly require fire protection. The Monterey community has two pieces of fire equipment, but it does not appear that this would be adequate. The utility may choose to have the contractor operating the CWC provide fire protection for the community by furnishing his own equipment, or it may choose to work out a different arrangement. Normally, fire equipment and fire protection services are the result of a joint venture between the local government and the people in the community. Any additional fire protection services needed would be created by the utility and would be indirect costs. Such costs would have to be negotiated between the local government and the utility.

Community relationships-- Placing a community of 1,650 persons assembled from throughout Virginia and the nation alongside a permanent community of 270 persons will create numerous human relation problems. The traditions and culture of the permanent community will be severely strained. Permanent residents may choose to accept or reject the newcomers. They may accept them on an economic basis because of their high income while rejecting them on a social, religious, or political basis. The range of problems will depend upon the age, marital status, culture and traditions of the people who come to live in the CWC.

The county may be able to reduce the severity of this problem by providing a community education program utilizing the facilities of the local high school and the educational talent and resources available within both communities--the permanent community and the CWC.

The relationship problem would not arise in the absence of the utility's project.

It is suggested that the county, possibly through the public school system, provide for a community education program similar to that developed by the Mott Foundation and carried out successfully in many communities[15]. Such a program might cost $25,000 annually. This would pay staff and provide supplies, heat and lighting, transportation, and custodial services. No other activity the county can offer will provide the opportunity to utilize the talents of both the permanent and temporary population in an effective and positive community-oriented way.

Displaying the Estimates

We believe it will be useful to display the estimates which we have developed, and we do this in three tables--one each for annual operating costs, capital outlays, and revenues.

There are still many questions requiring answers, and the reader can quickly determine what some of them are by scanning the body of each table for the question marks.

---

[15] Maurice F. Seay et al , Community Education: A Developing Concept (Midland, Mich.: Pendell Publishing Company, 1974).

Even with several operating costs undetermined, our estimates show that the county may have $270,000 in additional annual operating costs (see Table 1). There may be a tendency on the part of the principals to reduce this cost by foregoing the services provided by the indirect costs. Before this action is taken, the possible effects should be carefully evaluated.

The capital outlays required over the seven-year life of the CWC could total $82,000 without consideration of any such outlays for solid waste disposal or fire protection, items which will require negotiation. The single largest capital outlay may reach $50,000 and be for a Health Outreach Clinic, indicated as the facility under health care in Table 2. Of course, this particular outlay could be eliminated if the facility were located in rented space with the expectation of terminating this service when the CWC is closed. In such a case only the operating and maintenance costs would have to be considered.

Local government revenues are especially difficult to estimate, as the major potential sources depend almost entirely on how the utility and the contractor who manages the CWC decide to carry out its construction and operation. For example, mobile facilities would result in less property tax revenues than semi-permanent or temporary facilities, and both the type and mix of types remains an unknown. As a consequence, Table 3 contains relatively few data. Of course, the county will have to meet the operating costs and capital outlay costs at least one year before property tax revenues are realized, because of the process used to determine, levy, and collect such taxes.

After the county government and utility negotiate the undetermined operating costs and capital outlays, the cost to the county and, in turn, to the utility can be estimated with considerably more accuracy.

Some Observations

It is evident that the utility's construction project and its associated CWC will have a major impact on Highland County.

There is no evidence that the public and private services required to serve the CWC and other activity created by the project will be needed after the two-dam facility is completed. The significance of this must not be overlooked.

The permanent community may decide to retain one or more of the services discussed and proposed for the quasi-public-private sector, and this may, and quite properly should, be taken into account when the county and the utility make a final settlement.

While the two-dam facility is under construction, the economy of Highland County will have a level of activity and income previously unknown. When the construction is completed, the economy will readjust toward its traditional level of activity. This will cause effects similar to a severe recession. This adjustment will be difficult for permanent residents to accept, especially the younger residents, and an accelerated out-migration may occur among this segment of the population.

Table 1.--Estimated annual operating costs associated with direct and indirect cost items during the first year of full occupancy of a construction worker community of 1,650 persons in a rural county (Highland County, Virginia)

Item	Units	Per Unit Cost	Operating Cost
		(Dollars)	(Dollars)
- - - - - - - - - - - - Direct cost items - - - - - - - - - - - - - - - - - -			
Schooling:			
Children	350	550	192,500
Added mileage	a/	?	?
Classrooms, mobile . . .	a/	?	?
Law enforcement: b/			
Personnel	2	7,500	15,000
Mileage	30,000	0.15	4,500
Solid waste:			
Pick-up	c/	?	?
Covering	c/	?	?
Public health:			
Personnel	1	8,000	8,000
Interest:			
Notes	c/	?	?
Overhead:			
On direct operating . .	c/	?	?
- - - - - - - - - - - - Indirect cost items - - - - - - - - - - - - - - - - - -			
Health care:			
Personnel	3	25,000	25,000
Fire protection:	c/	0	0
Community education:			
Personnel	2	7,500(ave.)	15,000
Supplies.	n.a.	3,000	3,000
Utilities	n.a.	3,000	3,000
Custodial	½	4,000	4,000
Total			270,000+?

n.a. = not appropriate

a/ To be determined.

b/ Experience may show additional personnel needs

c/ It is assumed that operating costs are met from community subscription.

Table 2.--Estimated capital costs associated with direct and indirect cost items during the seven-year life of a construction worker community of 1,650 persons in a rural county (Highland County, Virginia)

Item	Units	Per Unit Cost	Capital Outlay
		(Dollars)	(Dollars)
- - - - - - - - - - - - Direct cost items - - - - - - - - - - - - - - - - - -			
Schooling:			
Buses	3	9,000	27,000
Law enforcement: a/			
Personnel equipment . . .	2	500	1,000
Automobile	1	4,000	4,000
Solid waste:			
Pick-up	b/	?	?
Covering	b/	?	?
Site use	b/	?	?
- - - - - - - - - - - - Indirect cost items - - - - - - - - - - - - - - - - - -			
Health care:			
Facility, new	1	50,000	50,000
Fire protection:	b/	?	?
Total			82,000+?

a/ Experience may show additional outlays are required.

b/ To be negotiated.

Table 3.--Estimated revenues produced during the first year of full occupancy of a construction worker community in a rural county (Highland County, Virginia)

Item	Taxable Value	Tax Rate	Revenue
Taxes:			
Property--			
Real estate	a/	?	?
Tangible personal . . .	a/	?	?
Public service	a/	?	?
Sales	$2,325,000	$0.02	$46,500
License-franchise	b/	?	?
Other	c/	?	?
Total			$46,500+?

a/ To be determined after construction and appraisal.

b/ No estimate attempted.

c/ Minor fees charged by county for administrative services. No estimate attempted.

Clearly the Board of Supervisors of Highland County needs to have specific information about selected aspects of the contract which will pertain to the CWC. Moreover, the utility needs to know what actions the county government would prefer that it take and vice versa. The necessary information can only be obtained when the two parties have established improved communication linkages and a process has been set up for determining their respective needs. The parties must develop appropriate negotiating procedures for determining the several types of costs which will be imposed upon the government of Highland County as a result of the construction project and the CWC.

Both the short-run and long-run employment possibilities created by the project should receive attention from the local governments in the area. If jobs are considered an essential element in rural development, the possibility exists of up-grading the local labor force for employment during the construction phase. For the short run, this should take the form of a carefully planned and executed vocational and on-the-job training program. The 50 permanent jobs represent the long run. These jobs should be aggressively sought by the permanent community residents. A special training program may be required for this opportunity to become a reality.

Although we have not determined the effects of the construction project

on Bath County or Pocahontas County, many effects would be similar in direction to those discussed for Highland County. We turn now to consider a different analytical procedure which may be used to evaluate the impact of the utility's project on the Highland-Bath-Pocahontas area.

THE ECONOMIC BASE APPROACH

We have described above the response made to a real situation and have presented the type of analysis that may be employed quickly to provide information to a local community seeking to adjust to a large external shock. Of necessity, the emphasis was on the need for information and a means of providing "ball-park" estimates of potential impacts. The preceding analysis relies heavily on readily obtainable data, the application of economic principles, and available knowledge about the community structure and the proposed project. No sophisticated models or techniques were used. With more time and manpower, a more rigorous analysis of expected impacts could be conducted and improved estimates developed.

We believe that some methods discussed in earlier papers, especially the method discussed by Dean Jansma, might be applied here. The use of the economic base approach, possibly with some extensions and modifications, would provide more detailed information about expected employment and income impacts of the utility's project and how different sectors of the Highland-Bath-Pocahontas area might be affected.

A Useful Article

Among the better examples applying economic base analysis is one prepared by Dean Schreiner and Dave Flood and contained in an Oklahoma State University publication[16]. In fact, this entire publication, which contains papers presented to a Rural Development Planning Workshop in 1971, is recommended reading for individuals working in community resource development who are interested in measuring the impacts of growth and change. In our opinion, the Schreiner-Flood article is among the best available on the use of economic base analysis. We draw heavily in the remaining part of this paper on their study to illustrate the use of economic base analysis for a given area.

The Concept

The essential ideas underlying the economic base approach have been described by Jansma. The simplest approach is to divide the community being studied into two markets: that part of the community's economy serving markets outside the area is called the basic (export) markets or export sector, and that part serving local area markets is called the non-basic (local) markets or service sector. Every industry provides services for one or both of these markets. An area's markets may be examined either on the basis of employment or income.

---

[16] Dean Schreiner and Dave Flood, "Area Analysis by Means of an Economic Base Study," Research Application in Rural Economic Development and Planning, Research Report P-665, (Ag. Exp. Sta. Oklahoma State University, Stillwater, July 1972). pp. 32-47.

A specific relationship is implicit in this simple division of economic activity. Exports are considered the prime mover of a local economy. Thus, employment serving these markets is considered "basic" employment; that serving local markets is considered "non-basic" employment. The fundamental premise of the theory underlying economic base analysis is that the growth, indeed the actual existence, of a region is dependent upon the goods and services it produces locally for its export market.

Although some industries, such as agriculture, are thought of as serving primarily the export market, it is more likely that most industries serve, to some degree, both the basic and the non-basic market. By dividing an area's economy into smaller units, or sub-sectors, more detail becomes known, and it may be possible to determine for each industry or group of industries the percentage of each serving the two markets. This extra detail makes it possible to learn more about the linkages and trade flows between each of the area's sub-sectors and its markets. Through such procedures, the economic base study provides more detailed information with regard to multipliers and impacts than the simple economic base study, but less than may be obtained from an input-output study.

A multiplier -- After the total economic activity of a region has been classified into basic and non-basic, it becomes a simple matter to compute a multiplier effect, which will tell us how much total employment (or income) will be created by an increase in basic employment (or income). When the local area is not experiencing a large external shock but is having more normal growth, the simplest assumption is that the initial ratio between the basic/non-basic markets will remain relatively constant over the long run. This assumption is perhaps less realistic when one is considering a large external change, such as a sudden doubling of employment in the basic sector. But using the simplest assumption, the multiplier is computed by taking the total employment in both basic and non-basic activity in the area and dividing by the total employment in basic activity.

The economic base approach can be extended to reflect more interrelationships in the structure of an economy. By dividing the total economy into various sectors, a more detailed examination is possible, such as picking up both direct exports and linked exports. One could also get a measure of the imports into the area which act as a drag or dampener on the regional multiplier. The refinements possible are numerous and almost unlimited. We cannot discuss them all in this paper.

An Example

The Schreiner-Flood study was done in a multi-county planning region of South Central Oklahoma. Instead of determining the market breakdown and interrelationships for each firm, all the businesses and firms were aggregated into three industry groupings: (1) agriculture, mining, and manufacturing; (2) construction, transportation, communications, finance, and services; and (3) retail and wholesale trade. In the following discussion these sectors are referred to by their respective numbers, i.e., as industry group 1, industry group 2, and industry group 3.

Some prior knowledge about the markets served by each industry within the group is needed to properly assign the data to each market. Communities differ in their economic structure; therefore, there is no one best way to group the different industries. For most communities, the Schreiner-

Flood groupings would appear reasonable, but in special situations, such as the impact of a major construction project like the one planned for the Highland-Bath-Pocahontas area, it appears desirable to treat the project as primarily an export sector, possibly a sector by itself. In this way it would be possible to estimate the number of jobs which would be needed in other economic sectors to serve the needs of the utility's construction workers.

After the initial industry groupings, the distribution of gross receipts for each group serving the basic and non-basic markets for the Oklahoma study were determined as shown in Table 4. It was estimated that 63 percent of the gross receipts of industry group 1 were derived from basic markets and about 37 percent from non-basic (local) markets. Seventy-four percent of the gross receipts for industry group 2 were derived from sales to local markets and 26 percent from basic markets. Industry group 3 derived 80 percent of its gross receipts from local markets and 20 percent from export. Given this knowledge, it was assumed that employment and income could be allocated according to type of market served in the same proportion as gross sales. That is, the proportion of total employment serving each of the two markets would be the same percentage as gross sales.

Table 4.--Distribution of industry sales

Sector	Local Markets	Basic Markets	Total
	- - - - - - Percentages - - - - - -		
(1) Agriculture, mining and manufacturing	37	63	100
(2) Construction, transportation, utilities, finance and services	74	26	100
(3) Retail and wholesale.	80	20	100

Source: Dean Schreiner and Dave Flood, "Area Analysis by Means of an Economic Base Study," in Research Application in Rural Economic Development and Planning, Research Report P-665 (Stillwater: Oklahoma State University, Agricultural Experiment Station, July 1972), p. 35.

Employment totals for the area were available from published government sources and were allocated to local and basic markets in proportion to the distribution of gross receipts. As is shown in Table 5, private sector employment in the study area totaled 54,694, of which 32,994 served local markets and 21,700 served basic markets. Of the 22,068 jobs in industry group 1, there were 14,007 (63 percent) serving the basic (export) market while 8,061 (37 percent) were serving non-basic (local) markets. Employment

Table 5.--Employment transaction flows

Sectors and Sub-sectors	Local Markets	Basic Markets	Total
Private sector:			
(1) Agriculture, mining and manufacturing	8,061	14,007	22,068
(2) Construction, transportation, utilities, finance and services	13,353	4,810	18,163
(3) Retail and wholesale . . .	11,580	2,883	14,463
Sub-total	32,994	21,700	54,694
Government sector:			
Local and state	8,097	0	8,097
Federal	0	6,396	6,396
Sub-total	8,097	6,396	14,493
Total	41,091	28,096	69,187

Source: Dean Schreiner and Dave Flood, "Area Analysis by Means of an Economic Base Study," in Research Application in Rural Economic Development and Planning, Research Report P-665 (Stillwater: Oklahoma State University, Agricultural Experiment Station, July 1972), p. 36.

in the government sector of the area totaled 14,493 persons, of which 8,097 were employed by state and local government and 6,396 were employed by the federal government. The federal government was assumed to serve only export markets, while state and local governments were assumed to serve only local markets. Schreiner and Flood refine the allocation between intermediate and final use further and explain this in considerable detail in their article.

As was stated earlier, economic base theory suggests that local markets exist only to serve basic markets. It is further assumed that a relationship exists between any additions to basic employment in an area and the non-basic employment required to serve local markets. This relationship may be expressed as an employment multiplier. Using the Oklahoma data, allocated as suggested, gives an employment multiplier of 1.46. If we accept this estimate, the 1.46 would mean that for each new job added in the basic sector, an additional 0.46 of a job would be created in the non-basic sector.

For instance, if we assume 300 workers are added in the basic employment sector, this would mean an additional 138 workers would be needed in the non-basic sector. If we assume further that the 300 workers in the basic sector earn an average annual income of $10,000 and the 138 workers in the non-basic sector earn an annual income of $8,000, then the total payroll generated by the 300 workers can be determined. The payroll for the 300 basic sector employees would be $3,000,000 annually, that for the 138 additional non-basic sector employees would be $1,104,000. Thus, the payroll generated in the community is some multiple of the payroll of the 300 new workers in the community. If we had assumed the 138 new workers needed in the non-basic sector would earn the same average income as the new basic sector employees, then the total additional payroll would have been $4,380,000, which is 1.46 times the $3,000,000 payroll for the basic sector employees.

In many cases, economic base studies stop with this approximation. Schreiner and Flood continue through more refinements of the data and analysis and derive estimates of employment multipliers for each of the three industry groups. Such refinements can add considerably to the reliability and usefulness of economic base analysis and provide much more information for evaluating the potential impacts that may be created within an economy by either internal or external forces.

Complements Budget Approach

As with most measurement techniques, the availability of data for economic base studies is a major problem. Yet such studies require less data than some other techniques used in area and regional analysis. In addition, they may provide some very useful information to community leaders and others struggling with evaluating economic impacts of a change in employment in one or more sectors of their economy.

This is one additional approach which might be applied in further analyzing the effect of the utility's project on the Highland-Bath-Pocahontas area. We note, however, that this would provide only a partial measure of expected impacts. The results could be used to complement other analyses to gain a more complete picture of possible impacts.

Some Observations

It should be kept in mind that an analysis employing the economic base approach does not tell one whether the creation of new jobs in the community is good, bad, or neutral. Nor does it address either the monetary or the non-monetary aspects of the cost of change, which will be borne by the local community.

However, using economic base studies to develop multiplier analysis obviously can be one of the most useful methods of empirical economic analysis. As with all methods, the result depends on the manner in which it is used and the problems to which it is applied. There is no substitute for the skill and judgment of the analyst. Both the limitations we have mentioned, and others not mentioned, will preclude applying the economic base approach to each and every major community project.

Our researchers still need to develop a method of determining the crucial variables which account for differences in the economic health and development of different regions and communities within regions. Multiplier analysis, because of its seeming precision, may obscure some of the most crucial impacts of community development projects. Precision is not synonymous with accuracy, as we all know. Charles Leven, a respected regional economist, makes this point well, closing one of his articles with a sentence which we will do well to ponder: "Better to obtain an approximate answer to some of the relevant questions than a precise formulation of the irrelevant"[17].

---

[17] Charles L. Leven, "Measuring the Economic Base," Papers and Proceedings of the Regional Science Association, Vol. 2 (1956), 250-258.

THE IMPACT OF RESIDENTIAL DEVELOPMENT ALTERNATIVES: A CASE STUDY PROBLEM

Edmund F. Jansen, Jr.

Introduction

What will be the impact of a new residential development on a community? Many residents in northeastern states expect residential developments to be followed by higher local property taxes, more congestion, pollution, etc. That is to say, residential developments are associated with negative fiscal and environmental impacts. Many people also agree that people with low incomes need more and higher quality housing. But where should it be located? If we could hear many local decision-makers thinking out loud, we might hear them answer:

"Certainly not in our town. We already have our share of that type of housing. What we need here are more 'clean industries' whose employees could reside in other towns in the area and send their children to other schools. However, we would like them to shop in our town."

"If new housing developments are permitted in our town, let's make sure that the occupants don't have too many school-age children. A housing project for the elderly would probably be okay, and perhaps some one-bedroom luxury apartments. But let's make sure we don't get more than our share of single-family houses, and above all, let's make sure that our regulations prohibit a sudden flood of mobile homes. Houses do not add to local revenues as much as they add to local costs."

Such thinking influences many of the decisions regarding land-use and housing regulations in many communities. Yet an analysis of the impact of alternative residential developments may prove that the impact of some housing is much different from what is commonly believed.

In this paper, we first briefly discuss some factors that influence the fiscal impact of residential developments on local communities. Then some housing studies that provide information about households and school-age populations are reviewed. Finally, a hypothetical residential housing impact case study problem is presented.

I. Factors Influencing Fiscal Impact of Housing

Local community decision-makers usually give highest priority to the possible fiscal impact of a new residential development. Will the new housing unit pay for itself in terms of local government revenues and taxes?

Edmund F. Jansen, Jr. is Associate Professor of Resource Economics, Institute of Natural and Environmental Resources, University of New Hampshire.

The chief factors determining whether an additional house will pay sufficient taxes to cover the cost of additional services are:

1. Local Improvement Policies - Some communities with subdivision regulations often require the developer to assume full financial responsibility for all site improvements. Thus, the first questions decision-makers might ask could be, "Does the developer pay all the site improvement costs for drainage, roads, sewer, water, etc.? If not, what proportion of the costs are borne by the local government?"

2. State-Local Fiscal Structure - In New Hampshire, where the state tax base is narrow, local governments receive only minor support from the state for education and other activities. Consequently, local property taxes must carry the burden of a large proportion of local governmental expenditures. A second concern thus might be, "What proportion of these expenditures are financed by local internal funds [which may include property, residence, sales, and income taxes, as well as various licenses]?" Assessment policies are also important, as they influence the amount of taxes paid by different kinds of real property.

3. Size and Age Composition of Occupant Households - Services provided to a household can be divided into: (a) dwelling-related services, such as roads, sewer, water, police and fire protection, and waste disposal; and (b) human services, such as, education, welfare, and health. Dwelling-related service expenditures are not influenced significantly by household size. However, expenditures on human services are directly related to age and size characteristics of households. The large number of school-age children is the major factor determining the level of expenditure for human services in most local communities. Consequently, a third area of concern is the sensitivity of local residents to development proposals that might lead to a significant increase in the number of children in the local school district.

II. Review of New Housing Impact Studies

Let us turn our attention to housing studies that provide some indication of the influence of household size, number of school children, and state-local fiscal structure on the fiscal impact of new housing.

1. Apartment Construction in Prince George's County, Maryland -

A study of new housing in Prince George's County, Maryland, indicated that neither private homes nor apartments pay their way in terms of fiscal impact[1]. In 1968, one- and two-family homes showed an average annual loss of $184 compared to an $86 loss for apartments. The loss from apartments, which contrasts with net gains from apartments in many other areas, is explained, in part,

[1] Doxiadis Urban Systems, Inc., Fiscal and Land Use Analysis of Prince George's County, June 1970.

by two facts: (a) the apartments were under-assessed compared to national averages, and (b) the residents having low incomes paid low local income taxes. In this case, the local fiscal structure was an important reason for the loss on apartments.

Numbers of school-age children per apartment unit by type of apartment and age were reported as follows:

	All Apartments	Newer Apartments
High-rise	.09	.20
Garden apartment	.33	.45
Town house	.81	-

These figures indicate that the average number of children per unit in all apartments is lower than for the new units. Using average figures for projection purposes would cause one to underestimate the impact of the additional new units. Consequently, sound judgment is required in selecting the parameters used in projecting expected impacts.

2. Apartment Survey in Dover, New Hampshire - Table 1 summarizes the results of an apartment occupant survey that was conducted in Dover, New Hampshire, in 1972[2]. The average size household of 2.48 persons was considerably below the state average of 3.2 persons as reported in the 1970 census. The finding that there were only .05 school-age children per household tends to support the contention that apartment dwellers place a small burden on the local school system. One will note that the number of children per apartment is considerably below the figures reported in the Prince George's County study. The very low number of school-age children per apartment unit in Dover is perhaps explained by the fact that a significant portion of the occupants are young--military personnel, and university students.

Assuming an average educational cost of $1000 per school-age child, the estimated average school cost per apartment in Dover was only $50. At the current tax rate and average assessed value per apartment unit, tax revenue per unit would be $325. Thus, tax revenue available for non-school purposes would have been about $275. This compares favorably with non-school tax revenue from other kinds of housing.

3. Mobile Home Park Impacts - Table 2 summarizes some of the highlights of a statewide mobile-home survey conducted in New Hampshire in 1972. Contrary to the commonly held view that mobile homes contain large numbers of children and, therefore, place a heavy burden

---

[2] Dover Planning Board, "Initial Report - Apartment Occupant Survey," Dover, N. H., 1972.

Table 1 - Summary of Apartment Occupant Survey, Dover, N. H., 1972

Item	Unit	Percent, Number, or Amount
Total responses	Number	173
Total occupants	Number	429
Average household size	Number	2.48
Average age of head	Years	28
Average children per apartment	Number	0.58
Average school-age children per apartment	Number	0.05
Average family income	Dollars	10,184
Average assessed value	Dollars	6,120
Assessed ratio	Percent	70
Tax rate	Dollars	53.10
Tax revenue per apartment	Dollars	325.10
Estimated school cost per apartment ($1000 x .05)	Dollars	50.00
Revenue per apartment for non-school purposes	Dollars	275.00

Source: Dover Planning Board. Initial Report - Apartment Occupant Survey. Spring/Summer 1972. Dover, N. H.

on the local school system, the study showed that the mean number of school-age children per mobile home was only .188. Based on a state average education cost of $973 per student, an additional trailer would be expected to increase school expenditures by $182.96, unless excess capacity existed in the local school. Assuming an average assessed value of $5,965 for trailer and lot, the owner would pay taxes amounting to $240.39. Consequently, tax revenue remaining for local non-educational purposes would be about $57.43.

Furthermore, since the occupants also pay resident and personal property taxes on their cars, the tax revenue available for non-school purposes would probably exceed $100. These findings tend to suggest that mobile housing may place a smaller fiscal burden on local governments than conventional housing which contains higher numbers of school-age children.

4. New Single-Family Units - In contrast to the Dover apartment survey, a recent survey of new single-unit housing in Rollinsford, New Hampshire, showed a much larger number of school-age children per unit[3].

Table 3 summarizes the finding from this survey of the housing constructed in town during the past three years. At an assessed value of $17,000 per unit, the average householder paid about $818 in real estate taxes (nearly two-thirds of these houses were modular units).

The education cost per unit was about $760 (Table 4). Using average per-unit cost figures for Rollinsford, the total cost of providing school and town services would have been $1,093.46. After adjusting for the fact that non-residential housing pays about 17 percent of town taxes, the data suggest that the town experienced a deficit of about $40 per additional unit of single housing. The survey thus concludes that single-unit housing places a much larger fiscal burden on the local community than apartments or mobile homes.

---

[3] Unpublished study conducted by James Voyles, University of New Hampshire, as special project in Resource Economics, May 1974.

Table 2 - Summary of the Impact of 100 Unit Mobile Home Parks in New Hampshire, 1972

Item	Number or Amount
Number of units	100
Total occupants	260
Persons per household	2.6
School children per household[1]	.188
Assessed value per unit[2]	$5,965.00
Tax rate (state average)	$40.30
Estimated tax payments per unit	$240.39
Estimated school cost per unit (average cost of $973.21 x .188 students)	$182.96
Estimated tax revenue per unit available for town and county uses	$57.43

[1] Number of school-age children per household were: Elementary and Middle School, .139; High School, .049.

[2] Includes value of house and lot. Assumes an initial trailer purchase of $7,513 less $2,392 for five years depreciation. The average mobile home lot is assessed at $844.

Source: Richard L. Tichenor, Edmund F. Jansen, Jr., and Nelson L. LeRay. "Mobile Home Park Community Educational Service Costs and Revenues in New Hampshire." Journal of the Northeastern Agricultural Economics Council, Vol. 2, No. 2 (October 1973), 143-152.

Table 3 - Summary of New Single-Unit Housing Survey, Rollinsford, N. H., May 1974

Item	Percent, Number or Amount
New units of single-family housing	25
Number of units responding to survey	23
Total occupants in responding units	85
Average household size	3.7
Children per unit:	
Pre-school	.602
Rollinsford Elementary School	.473
Somersworth Middle School	.215
Somersworth High School	.301
Other schools	.129
Estimated assessed value per unit	$17,000
Assessment ratio[1]	73%
Equalized value per unit	$23,288

[1] Ratio of assessed value to market value

Table 4 - Summary of Local Revenue and Costs for Additional Single-Unit Housing in Rollinsford, N. H., 1974

Additional average revenues per unit:	
Property tax revenue (assessed value x tax rate)[1]	$817.70
Estimated resident tax collected[2]	15.00
Estimated auto permit fees	35.00
Total estimated local revenues	$867.70
Additional average costs per unit:	
Education[3]	
Rollinsford Elementary School (.473 children x $786)	$371.78
Somersworth Middle School (.215 children x $683)	146.84
Somersworth High School (.301 children x $806)	242.60
Total education cost per unit	$761.22
Town and County Government	
Average for all services per unit[4]	$332.24
Total average additional costs	$1,093.46
Additional costs assigned to housing units[5]	$907.57
Net revenue deficit per unit[6]	$ 39.87

[1] The additional assessed value was $16,964 per unit. The 1974 tax rate was $48.20.

[2] The resident tax is $10.00 for each adult, but collection is below 100 percent.

[3] Elementary school costs calculated as elementary school appropriations divided by the number of children. That is $191,874/244 = $786. Student cost figures for Somersworth are the tax rate.

[4] Assumes per unit cost is equal to town average. If economies of scale exist, this figure may overestimate costs assigned to the marginal unit. All capital improvement costs were paid by developer.

[5] Additional costs assigned to the housing unit are calculated as total per unit additional costs less 17 percent of the tax burden which is assigned to the assessed non-residential property. (This assumes non-residential property will increase in same proportion now existing.)

[6] In the short run, the additional cost of another housing unit is actually less than $908, because elementary education costs will increase less than $371.78 for each additional child. The school, which has excess capacity due to declining enrollment, can absorb 30 or 40 children without a substantial increase in operating costs.

III. Residential Development Case Study Problem

(Editor's note: The remainder of this paper was prepared as the basis for an analysis by the workshop participants of a hypothetical housing development in Rollinsford, New Hampshire for which four alternative kinds of housing were under consideration. The information given includes background about the community and its facilities, data about the population, and a set of tables about the tax base, cost of public expenditures, public revenue, and town and school tax rates. A work sheet then follows for each type of housing to record problems and questions associated with each type of proposed development and to rank the four alternatives with respect to their environmental, fiscal, and other impacts.)

Gato Gardo Development Enterprises, Inc., of New York City, has just taken an option to purchase the 90-acre Green Acres Farm on Roberts Road in Rollinsford, New Hampshire. A representative of the corporation has met with the Planning Board to discuss the possibility of obtaining zoning changes. Currently, the land is zoned as countryside residential with a minimum lot size of two acres. The developers say they are willing to design a "development" that best fits the needs of the community - provided, of course, that the project provides a reasonable return on investment. Planning is still in the preliminary stages and four alternative kinds of housing developments are being considered for the site. These include:

1. Single-family housing - Assume that the developer will pay virtually all initial public improvements costs (streets, utilities, etc.) in conformance with local subdivision regulations. Minimum size lots for single-family houses permitted by zoning are 15,000 sq. ft. Average assessed value will be $21,000 per unit.

2. Mobile Home Subdivision - Minimum size lot is 10,000 sq. ft., and assessed value per lot is $2,000. Initial public improvement costs will be paid by the developer. Average assessed value of trailers is expected to be $7,000.

3. High-Rise Apartments - Three 8-story buildings with 100 units each. Buildings will be clustered, and the remaining area will be devoted to a golf course, lake, and open space area. Assessed value per unit will be $8,000.

4. Condominium - Two hundred and seventy condominium units assessed at $27,000 per unit will be clustered. Each building will contain 8 two-bedroom units. Buyers of a unit will automatically become members of an owners' association that has responsibility for managing the land area to be held in common.

The Planning Board wishes to evaluate the impact of each of these proposals on the town. We have been asked to help the Board identify and assess the relevant costs and benefits associated with each alternative.

Background Information

The Planning Board has supplied us with the following description and data for Rollinsford:

The Town - Rollinsford, a town of 2,400 inhabitants, is located between Dover, New Hampshire, and South Berwick, Maine, about nine miles northeast of Durham, New Hampshire. Rollinsford, which now serves primarily as a bedroom town, was first settled in 1623-24 by men who came to establish mills on the Salmon Falls River. This river, which serves as the border between Maine and New Hampshire, provided the basis for the thriving mill and trading activities that were well developed by 1630. The early settlers soon began to cultivate the productive farm land in the area between the river and Dover. For nearly two centuries, the town remained a small, peaceful agricultural settlement (except for an Indian massacre on March 18, 1690).

A period of rapid population and economic growth began in the 1820's when textile mills were constructed at the waterfalls at the sites of the present-day City of Somersworth and Salmon Falls Village in Rollinsford. After population centers developed around the mills, the farmers began to lose political control. In an effort to regain this control, the farmers in the southern part of the town pushed a bill through the legislature in 1849 which divided the large industrialized mill area of the north (present-day Somersworth) from the agricultural southern area (present-day Rollinsford). The coming of the railroad and mill expansion at Salmon Falls Village eventually caused the population of Rollinsford to exceed 3,000 before the mills failed during the economic crisis of the 1930's. Then the town declined to a forgotten area of less than 2,000 people.

With the advent of rapid growth in New Hampshire in the 1960's, the town began to attract immigrants who were looking for a residential town with low tax rates. The ensuing population growth led to an expansion in the demand for local public services and a recent rapid growth in town expenditures and tax rates.

Under existing large-lot zoning regulations, the saturation population for the town is around 6,000 people. Changes in zoning regulations to accommodate higher density apartment houses or mobile homes could more than double this saturation population. Clearly, such growth would destroy the peaceful rural atmosphere and voluntary government in the local community.

A large proportion of the 7.4 square miles in the town still remains open and provides attractive sites for future developers. Although the residents want lower taxes and more industrial development, the majority of the residents state that they would like to maintain the town's rural, friendly atmosphere.

Rollinsford's Facilities

Police Department: Two-man department with extra part-time officers on weekends.

Fire Department: Twenty-man volunteer department. Ladder truck, two pumpers and tank trucks. New 4-bay Fire Station completed in 1973 is located on Roberts Road at the junction of Main and Silver Streets. Most citizens consider fire protection good.

Water District: A Water District serves the Salmon Falls Village area of the town. Water is pumped from wells by three pumps. The existing 75,000 gallon water tank is inadequate for fire-fighting use. A study is under way to determine future town needs.

Hook-up cost is covered by residents securing new service. The Water District is not financed by the town government, except for some long-term bonds.

Sewer District: A separate governmental entity that provides sewer service to about 300 households in the Salmon Falls Village. A secondary treatment sewer plant, which was constructed about five years ago, only operates at about 40 percent of capacity. Lack of sewer lines prohibits the acceptance of additional households. The plant could serve another 350 households without expanding its facilities. Likewise, operating costs would not be increased significantly by increasing the number of households served.

Solid Waste Facilities: The town operates a solid waste collection service and practices open-dump burning. The town has recently purchased 66 acres for a possible land-fill site, but no plans have been made to comply with the State prohibition on open-dump burning after July 1975.

Roads and Streets: The town has a full-time road agent, a full-time assistant and some part-time help. Only 12 miles of road are town-maintained. The other 12 miles are either state-maintained or receive no maintenance.

School District: The School District covers the same area as the town, except for about 50 housing units along Rollins Road which are part of the Dover School Offset. The town operates an elementary school containing 12 classrooms where classes are held for the first six grades. Class size now averages 20 children or less. Students in grades 7 through 12 are sent to Somersworth Middle School and High School under an area agreement. Tuition rates for these students are based on average student costs in the Somersworth classes.

Subdivision Ordinances and Zoning: The town has subdivision and zoning ordinances. The five land-use zones in the town are urban, suburban, countryside residential, commercial, and industrial. The 90-acre development site is currently zoned countryside residential. Without sewer and water the minimum size lot is 2 acres. With sewer and water the minimum size lot declines to 15,000 sq. ft. Mobile homes are not permitted in the area. Multi-family housing, apartments, and cluster housing are permitted only by an exception secured from the Board of Adjustment.

Table 5 - Population and Household Characteristics, Rollinsford, N. H., 1960, 1970 and 1974.

Age	1960	1970	1974
Under 5	243	200	[a]
5-9	208	235	"
10-14	221	250	"
15-19	102	197	"
20-24	102	195	"
25-34	274	281	"
35-44	275	291	"
45-54	201	286	"
55-64	164	182	"
65-74	87	99	"
75 +	58	57	"
TOTAL	1935	2273	2400
Occupied dwelling units	567	685	720
Persons per household	3.4	3.3	3.3
Public school population			
Total			
Elementary [b]	156	275	244
Junior high school	56	96	91
High school	-	120	173
Per Dwelling Unit			
Elementary	.27	.40	.34
Junior high school	.10	.14	.13
High school	-	.18	.24

[a] Data not available

[b] Parochial school closed in 1967

Table 6 - Property Tax Base, Rollinsford, N. H., 1973-1974

Item	1973-1974
Actual	
Total town assessed valuation	$10,524,523.00
Assessment ratio[1]	73%
Residential as percent of total	83%
Per capita assessed valuation	$4,385.00
Per student assessed valuation	$20,117.00
Tax rates	
County	$3.00
Town	$8.10
School district	$37.10
Equalized	
Total assessed valuation	$14,629,796.00
Per capita assessed valuation	$6,095.00
Per student assessed valuation	$29,735.00
Tax rates per $1,000 assessed valuation	
County	$2.20
Town	$5.94
School district	$27.19

[1] Ratio of assessed value to market value

Table 7 - Cost of Public Expenditures per Occupied Housing Unit
Rollinsford, N. H., 1973 and 1974

Unit of Government and Function	1973	1974 (appropriated)
School District [1]		
Education	$697.03	$706.76
Town Government [2]		
Fire protection	$14.23	$14.99
Police	38.66	40.42
Public welfare	5.43	6.25
Health	1.46	1.74
Highway	47.11	47.86
Waste disposal	14.48	13.89
Administrative & other	67.89	74.65
Capital outlay & debt service		
Capital outlay	2.13	10.49
Interest	19.22	21.87
Principal	61.06	53.96
Total town	$271.67	$286.12
County Government		
County assessment	$44.03	$46.23 (est.)
Total expenditures per unit	$1,012.73	$1,039.11

[1] There were 650 households in the school district in 1973 and 665 households in 1974.

[2] There were an estimated 705 occupied units in the town in 1973 and 720 occupied units in 1974.

Table 8 - Average Public Revenue per Household Unit by Source and Use, Rollinsford, N. H., 1973 and 1974.

Item	1973	1974
Education		
Outside revenues	$131.60 (19%)	$161.14 (23%)
Local property tax	565.43 (81%)	545.62 (77%)
Total	$697.03	$706.75
Town and County Government		
Outside revenues	$205.85 (65%)	$189.44 (57%)
Local property tax	109.86 (35%)	142.91 (43%)
Total	$315.70	$332.35
Total property tax per unit	$675.29	$688.53
Average property tax assessed per household ($675 x .83)	$560.25	$571.48

Table 9 - Residential Development Alternatives; Calculation of Rollinsford, N. H., Town Tax Rate, 1974

Item	
Total town appropriations	$218,306.56
Total revenues and credits	-132,217.00
Net town appropriations	86,089.56
Stock and trade credit	- 17,706.00
	68,383.56
War service tax credits	+13,040.00
Overlay	3,975.70
Tax liability (town)	+85,399.26
Tax liability (county)	31,044.84
Total[1]	$116,444.10

Tax Rate

County	$\frac{31,045}{10,524,523}$ X 1,000 =	$3.00 per $1,000 assessed value
Town	$\frac{85,399}{10,524,523}$ X 1,000 =	$8.10 per $1,000 assessed value
School[2]	$\frac{367,575}{9,897,503}$ X 1,000 =	$37.10 per $1,000 assessed value
Total tax rate		$48.20

[1] Total tax liability exclusive of school district

[2] Calculated from Table 10

Table 10 - Residential Development Alternatives: Calculation of Rollinsford, N.H., School Tax Rate, 1973.

Item	
Total budget expenditures	$453,070
School revenues[1]	-48,399
Tax revenue required	404,671
Stock and trade credit[1]	-37,096
Rollinsford tax liability	367,575
Rollinsford school tax base (School District assessed property)	$9,897,503
School tax rate per $1,000 assessed value[2]	$ 37.10

[1] School revenues are received directly by the School District; whereas a credit is revenue received by the Town and then transferred to the School District.

[2] Tax rate = $\frac{\text{Rollinsford tax liability}}{\text{School District tax base}}$

Work sheet - Single House Development

1. What problems will the community encounter with this kind of development?

2. What questions will you ask regarding this kind of development?

3. How would you rank this proposal among the four housing proposals with respect to:

   a.) Environmental impact

   b.) Fiscal impact

   c.) Economic impact

   d.) Social impact

   e.) Political impact

   What criteria and reasons did you use to rank each impact?

Work sheet - High-Rise Apartments

1. What problems will the community encounter with this kind of development?

2. What questions will you ask regarding this kind of development?

3. How would you rank this proposal among the four housing proposals with respect to:

   a.) Environmental impact

   b.) Fiscal impact

   c.) Economic impact

   d.) Social impact

   e.) Political impact

   What criteria and reasons did you use to rank each impact?

Work sheet - Mobile Home Subdivision

1. What problems will the community encounter with this kind of development?

2. What questions will you ask regarding this kind of development?

3. How would you rank this proposal among the four housing proposals with respect to:

   a.) Environmental impact

   b.) Fiscal impact

   c.) Economic impact

   d.) Social impact

   e.) Political impact

   What criteria and reasons did you use to rank each impact?

Work sheet - Condominiums

1. What problems will the community encounter with this kind of development?

2. What questions will you ask regarding this kind of development?

3. How would you rank this proposal among the four housing proposals with respect to:

   a.) Environmental impact

   b.) Fiscal impact

   c.) Economic impact

   d.) Social impact

   e.) Political impact

   What criteria and reasons did you use to rank each impact?

Selected References

Doxiadis Urban Systems, Inc. Fiscal and Land Use Analysis of Prince George's County. Final Report. Volumes I, II and III. June 1970.

Mace, Ruth L., and Wicker, Warren J. "Do Single-Family Homes Pay Their Way?" Research Monograph 15. Urban Land Institute. Washington, D.C. 1968.

Redlech, Susan. Guiding Growth: A Handbook for New Hampshire Townspeople. Society for the Protection of New Hampshire Forests. Concord, N. H., March, 1974.

Tichenor, Richard L.; Jansen, Edmund F., Jr.; and LeRay, Nelson L. "Mobile Home Park Community Educational Service Costs and Revenues in New Hampshire." Journal of the Northeastern Agricultural Economics Council, Vol. 2, No. 2 (October 1973), 143-152.

Weeks, Silas. Mobile Homes and Community Planning. Extension Publication No. 14. Cooperative Extension Service, University of New Hampshire. Durham, 1972.

SUPPLEMENT

Questions to Ask on the Hidden Costs of Development*

EDUCATION

Studies have shown that statistically you should assume that there is one child in school from each family at all times. Families having no schoo-age children are offset by families having more than one child in school.

The exact costs of expanding a school system will depend on a variety of local circumstances, but a rough figure can be obtained by taking the present school budget and dividing it by the number of children attending the schools. Then multiply the cost per pupil figure by the number of new families expected. In many cases, new capital expenditures will be required for new or expanded buildings, added buses, perhaps new waste treatment facilities, roads, parking areas, and playgrounds.

Not only must these initial capital expenses be calculated, but also the cost of the capital (i.e., interest on borrowings and provisions for its repayment) must be included in computing the cost to the community of this added educational burden.

How many children will the new development either directly or indirectly bring into your community?

Does the present school system have enough excess capacity to absorb these additional children? If not, what will be the cost of additional teachers, staff, supplies?

Will you need additional buildings, playgrounds, etc.? If so, how much will they cost? And, most importantly, where will the funds come from to meet these increased costs?

PUBLIC UTILITIES

At what stage of development will you have to install a community sewage system, a sewage treatment plant?

How will the development affect the community's present water supply? Will a lot of wells lower your water table to the injury of present citizens? Can the present water supply be increased and at what cost?

What equipment will have to be bought and how much staff hired?

How will you dispose of the additional waste that will be created by this development? Will you have to buy new areas for land fill?

---

* Susan Redlech. Guiding Growth: A Handbook for New Hampshire Townpeople. Society for the Protection of New Hampshire Forests. Concord, New Hampshire, 2 ed. March 1974, pp. A-11 to A-13.

Will the installation of new or additional public utility systems mean that all the residents of the community have to pay a special assessment?

How can resources be recycled?

RECREATION

Are the community's present recreational facilities meeting the demands of the community?

Will new recreational facilities created by a new development be open to the community as a whole?

Will the new development require existing recreational facilities to be expanded and open for longer periods of time? Will additional staff be needed to operate and maintain these facilities?

Has the community made adequate provisions for park land and open space?

Should you require mandatory dedication of needed park lands or open space?

NATURAL RESOURCES

Water Supply:

Additional growth will place additional demands upon water resources. Multiply the estimated population growth by per person water consumption rates.

In areas with bedrock relatively close to the surface, communities seeking to plan wise use of their groundwater should realize the implications. Centralized water supply is extremely costly if a population is thinly dispersed over a wide area with bedrock within five feet of the surface. Water lines need to be laid below the frost line; costs for excavating rock and rocky soil run high. (Contact the Water Resources Board for assistance in research.)

What is the current available flow of water?

Will the supply be capable of meeting the expected future demand?

Are water recharge areas (e.g., aquifers) being covered over by new developments?

Water Pollution:

Depending on soil conditions and sewage treatment facilities, additional population presents a potential source of both ground and surface water pollution. For a start, survey soil conditions to assess their capacity to filter wastes. With the help of extension agents, compute the local stream or river absorption capacity. Divide that capacity by the per capita BOD (biochemical oxygen demand) that will be generated by the increased amount of effluent flowing into it to estimate the magnitude of potential pollution.

Air Pollution:

Every house, car, store, or industry is a potential source of air pollution. For each type of additional development allowed, compute the possible emissions to be generated. (Contact the Air Pollution Control Agency for assistance in measurement of air quality.)

Does your present air quality meet the required standards?

Will the new sources of air pollution substantially degrade your air quality?

Open Space:

Population growth usually means more acreage covered with construction.

How many acres a year are being covered by development?

How long until a good percentage of land will disappear under roads and pavement?

How many acres of significant wildlife habitats are threatened?

How much more recreational area will be needed to serve additional residents?

How much land for trash disposal, roads, and utility corridors will be required to accommodate new growth?

PUBLIC SERVICES

Fire:

If you have a volunteer fire system, will you have to change to a paid staff?

Will you need more equipment and at what cost?

A fire department must be relatively near the potential location of fires. Thus, will you have to build one or more fire stations?

Is your present water system good enough to provide adequate fire protection?

Will the new development mean that you need inspections to see that fire prevention is adequate?

Law Enforcement:

Can your present police force handle an increase in density of population, or will you have to enlarge the force to maintain the same quality of protection?

Will you have to build a new police station?

Will the police need new equipment such as automobiles, motorcycles, call boxes?

Will you need a new jail and staff to operate it?

Health and Welfare:

Will the new development eventually require you to provide health care for the needy?

Will you have to provide more hospital and clinic care?

How many people will you have to hire, and what buildings will you need?

Will you have to have a system of health inspection of schools, restaurants, water supply, and waste disposal?

Will increase in population force you to establish new clinics for such things as pre-natal care and drug treatment?

Are there additional health problems that may be caused by community growth?

Transportation:

What new roads will have to be built and what old roads will have to be widened, strengthened, or paved? How much of the cost of this expansion will the community have to bear?

Will a formal system of traffic control have to be installed? How many police will this require and what equipment such as traffic lights, parking meters, and tow trucks will be needed? What about sidewalks? Snow removal?

What will be the added costs of maintenance of additional town roads?

What will the community have to do in regard to public transportation?

To what extent will expansion of transportation requirements mean assessments against the existing population?

APPENDIXES

APPENDIX A

PROGRAM

WORKSHOP ON CONTROLLED AND BALANCED GROWTH: EVALUATING COMMUNITY IMPACTS OF ECONOMIC GROWTH PROPOSALS
June 16-19, 1974 at
New England Center for Continuing Education,
University of New Hampshire, Durham

Sponsored by Northeast Regional Center for Rural Development

SUNDAY, JUNE 16

Registration 4:00 - 8:00 p.m.

JUNE 17

Registration 8:00 - 9:00 a.m.

MONDAY MORNING - SESSION 1: 9:00 a.m.

Chairman, Filmore E. Bender, University of Maryland
Welcome - Maynard C. Heckel, University of New Hampshire

Economic Development - Impacts and Implications*

The Economist's View - William J. Bellows, University of Maryland
The Ecological Implications of Economic Growth - Phillips W. Foster and Robert E. Menzer, University of Maryland
The Sociological Implications of Economic Growth - Ward W. Bauder, Economic Research Service, USDA and Cornell University
The Fiscal Implications of Economic Growth - Frank M. Goode, Pennsylvania State University

MONDAY MORNING - SESSION 2: 11:00 a.m.

Measuring the Impacts of Economic Growth
Chairman, Robert L. Christensen, University of Massachusetts
What Tools are Available to Measure the Impacts of Economic Growth? - J. Dean Jansma, Pennsylvania State University

---

* An invited paper on "The Political Implications of Economic Growth" was not available for presentation at the Workshop nor for inclusion in the Proceedings.

p. 174 blank

MONDAY AFTERNOON - SESSION 3: 1:30 p.m.

Case Study I: Evaluation of the Impact of a New Plant - Burl F. Long and J. Paxton Marshall, Virginia Polytechnic Institute

Income and employment factors
Ecological impacts
Sociological implications
Political implications
Tax considerations

4:45 p.m. Tour to Portsmouth Urban Renewal and Preservation Project

JUNE 18

TUESDAY MORNING - SESSION 4: 9:00 a.m.

Case Study II: The Impact of a Seasonal Home Development - Gerald Cole, University of Delaware and Malcolm I. Bevins, University of Vermont

Income and employment factors, ecological impacts, sociological and political implications, and tax considerations.

TUESDAY AFTERNOON - SESSION 5: 1:30 p.m.

Case Study III - Residential Development Alternatives and Their Impacts - Edmund F. Jansen, Jr., University of New Hampshire, session leader.

The participants in small groups will work through an analysis of a proposed residential development which includes a spectrum of choices, taking into account the types of impacts considered during Sessions 1-4.

SESSION 6: 4:00 p.m.

Resolution of Residential Development Decisions
Chairman - Robert L. Jack, West Virginia University

Reports from Session 5 small groups and discussion.

JUNE 19

WEDNESDAY MORNING - SESSION 7

Chairman, Kenneth E. Wing, University of Maine

9:00 Information Problems in Assessing the Impacts of Economic Development - John R. Fernstrom, Extension Service, USDA

9:45 Impact Measurement Tools Re-examined in the Light of the Workshop Experience - J. Dean Jansma, Pennsylvania State University

11:00 Where Do We Go From Here? - Discussion

11:30 Rural Development in the Northeast and the Regional Center - Olaf F. Larson, Northeast Regional Center for Rural Development

12:00 Adjournment

APPENDIX B

PARTICIPANTS IN WORKSHOP

Connecticut

Russell E. Hibbard
Cooperative Extension Service
Norwich, Connecticut

Delaware

Gerald L. Cole
Department of Agricultural and Food Economics
University of Delaware
Newark, Delaware

District of Columbia

John Fernstrom
Extension Service
U.S. Department of Agriculture
Washington, D.C.

Florida

Ben Abbitt
University of Florida
Gainesville, Florida

Georgia

Leon Abbas
Rural Development Center
Tifton, Georgia

Douglas Braithwaite
Rural Development Center
Tifton, Georgia

Indiana

William Beach
Extension Service
Vincennes, Indiana

Oscar Hopkins
Extension Service
New Albany, Indiana

Glenn Nelson
Department of Agricultural Economics
Purdue University
W. Lafayette, Indiana

Indiana (Con't.)

Robert Sampson
Extension Service
Terre Haute, Indiana

Maine

Paul Bracciotti
Cooperative Extension Service
University of Maine
Orono, Maine

Edmund Wakelin
Cooperative Extension Service
University of Maine
Orono, Maine

Kenneth Wing
Department of Agricultural and Resource Economics
University of Maine
Orono, Maine

Maryland

William J. Bellows
Department of Agricultural and Resource Economics
University of Maryland
College Park, Maryland

Filmore E. Bender
Department of Agricultural and Resource Economics
University of Maryland
College Park, Maryland

Phillips W. Foster
Department of Agricultural and Resource Economics
University of Maryland
College Park, Maryland

George E. Monroe
Extension Service
Snow Hill, Maryland

Maryland (Con't.)

Dean F. Tuthill
Extension Specialist
University of Maryland
College Park, Maryland

Massachusetts

Robert L. Christensen
Department of Agricultural and
Food Economics
University of Massachusetts
Amherst, Massachusetts

Arnold C. Lane
Cape Cod Extension Service
Barnstable, Massachusetts

Michael Sikora, Jr.
Plymouth County Extension Service
Hanson, Massachusetts

New Hampshire

Charles Allen
Department of Economic Development
Concord, New Hampshire

Ed Bernard
Regional HUD Office
Manchester, New Hampshire

John F. Damon
Cooperative Extension Service
Conway, New Hampshire

Daniel Gene Ellison
Cooperative Extension Service
Concord, New Hampshire

Maynard C. Heckel, Director
Cooperative Extension Service
University of New Hampshire
Durham, New Hampshire

Edmund F. Jansen, Jr.
Institute of Natural and
Environmental Resources
University of New Hampshire
Durham, New Hampshire

New Hampshire (Con't.)

Silas B. Weeks
Institute of Natural and
Environmental Resources
University of New Hampshire
Durham, New Hampshire

New Jersey

Larry Newbold
Cooperative Extension Service
Cape May Courthouse, New Jersey

New York

Ward W. Bauder
U.S.D.A. and Department of Rural
Sociology
Cornell University
Ithaca, New York

Kenneth Cobb
Cooperative Extension
Syracuse, New York

Kenneth Gardner
Cooperative Extension
Montour Falls, New York

Lowell Gibson
Farmers Home Administration
Syracuse, New York

Gerald H. Hill
Cooperative Extension
Plattsburgh, New York

Jack Massaro
Farmers Home Administration
Saugerties, New York

John Snyder
Cooperative Extension
Cornell University
Ithaca, New York

Donald J. White
Cooperative Extension
Voorheesville, New York

North Carolina

Leon Danielson
North Carolina State University
Raleigh, North Carolina

Pennsylvania

Frank M. Goode
Department of Agricultural Economics
and Rural Sociology
The Pennsylvania State University
University Park, Pennsylvania

J. Dean Jansma
Department of Agricultural Economics
and Rural Sociology
The Pennsylvania State University
University Park, Pennsylvania

William Harry Schaffer
Cooperative Extension Service
Reading, Pennsylvania

G. Roger Titus
Cooperative Extension Service
Huntingdon, Pennsylvania

Francis Turner
Cooperative Extension Service
Tunkhannock, Pennsylvania

Vermont

Malcolm Bevins
Department of Resource Economics
University of Vermont
Burlington, Vermont

Norris Elliott
Extension Service
University of Vermont
St. Johnsbury, Vermont

Robert Townsend
Extension Service
Woodstock, Vermont

Virginia

Burl F. Long
Department of Agricultural Economics
Virginia Polytechnic Institute
Blacksburg, Virginia

Virginia (Con't.)

J. Paxton Marshall
Department of Agricultural Economics
Virginia Polytechnic Institute
Blacksburg, Virginia

West Virginia

Robert L. Jack
Division of Resource Management
West Virginia University
Morgantown, West Virginia

Edmond Rollo
Cooperative Extension Service
West Virginia University
Morgantown, West Virginia

Wyoming

Richard T. Clark
Department of Agricultural Economics
University of Wyoming
Laramie, Wyoming

Robert R. Fletcher
University of Wyoming
Laramie, Wyoming

Northeast Regional Center for Rural
Development

Leslie C. Hyde
Olaf F. Larson

PUBLICATIONS OF THE NORTHEAST REGIONAL CENTER FOR RURAL DEVELOPMENT

Working Papers on Rural Community Services: National Workshop on Problems of Research on Delivery of Community Services in Rural Areas, December 13-16, 1971. Compiled by S. M. Leadley. (Published by the Northeast, the North Central, and the Western Regional Centers, the Southeast Regional Rural Development Research Center at Tuskegee Institute, and the Southern Association of Agricultural Experiment Station Directors)

Papers of the Workshop on Current Rural Development Regional Research in the Northeast, July 25-28, 1972

Publication

1. *Supplement to Task Force Report on Rural Development Research in the Northeast For the Next Five Years — A Framework.* August 1973.
2. *Community Resource Development: A Preliminary Bibliography of Extension-Related Material in the Northeast.* December 1973.
3. *An Inventory of Pilot Projects in Community and Rural Development: Cooperative Extension Programs in the Northeast* (forthcoming).
4. *Papers — Workshop on Evaluating State Title V Pilot Programs in the Northeast, October 29-31, 1974.* January 1975. One dollar per copy.
5. *The Proceedings of the Conference on Rural Land-Use Policy in the Northeast,* October 2-4, 1974. February 1975. Three dollars per copy.
6. *A Basic Introduction to Land Use Control Law and Doctrine.* By E. F. Roberts. March 1975. One dollar per copy.
7. *State Land-Use Laws in the Northeast: A Compendium and Classification of Selected Statutes.* By Leslie C. Hyde. April 1975. One dollar per copy.

Programs of the Northeast Regional Center for Rural Development are available without regard to race, color, religion, sex or national origin.

0176